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MARCH
1934

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FLEET OWNER

THE FERGUSON PUBLISHING CO., 90 WEST ST., NEW YORK, N.Y.

Devoted to the Better Operation and Maintenance of Truck, Bus, Taxicab, Passenger Car and All Automotive Fleets

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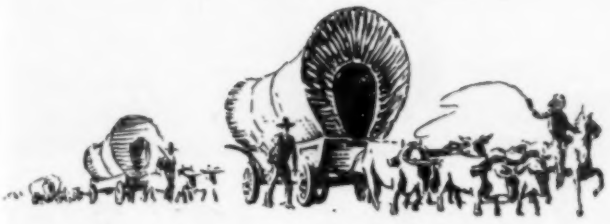

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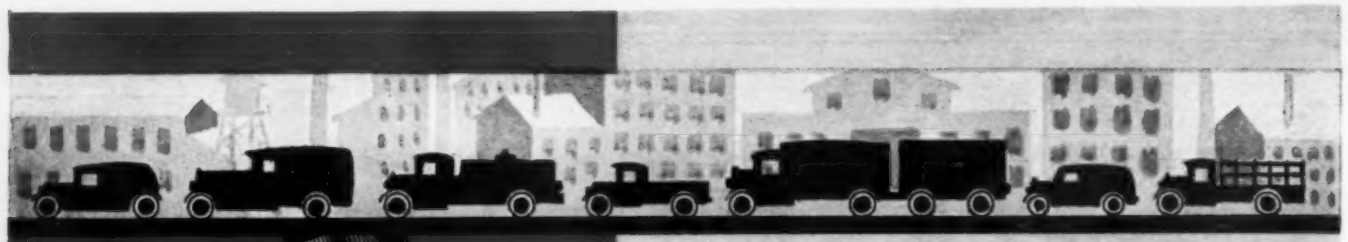

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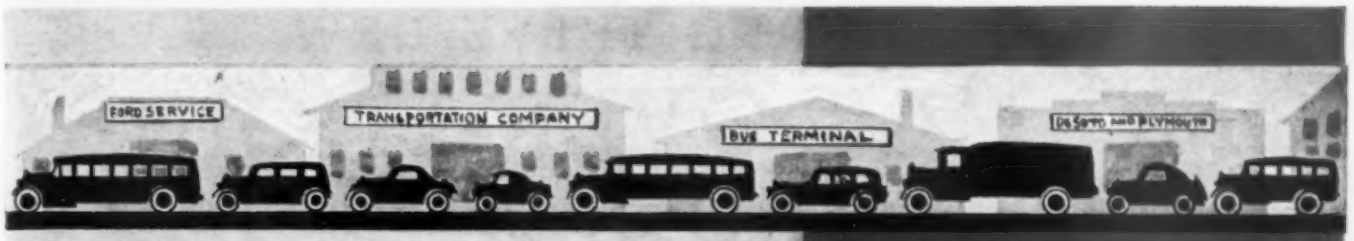

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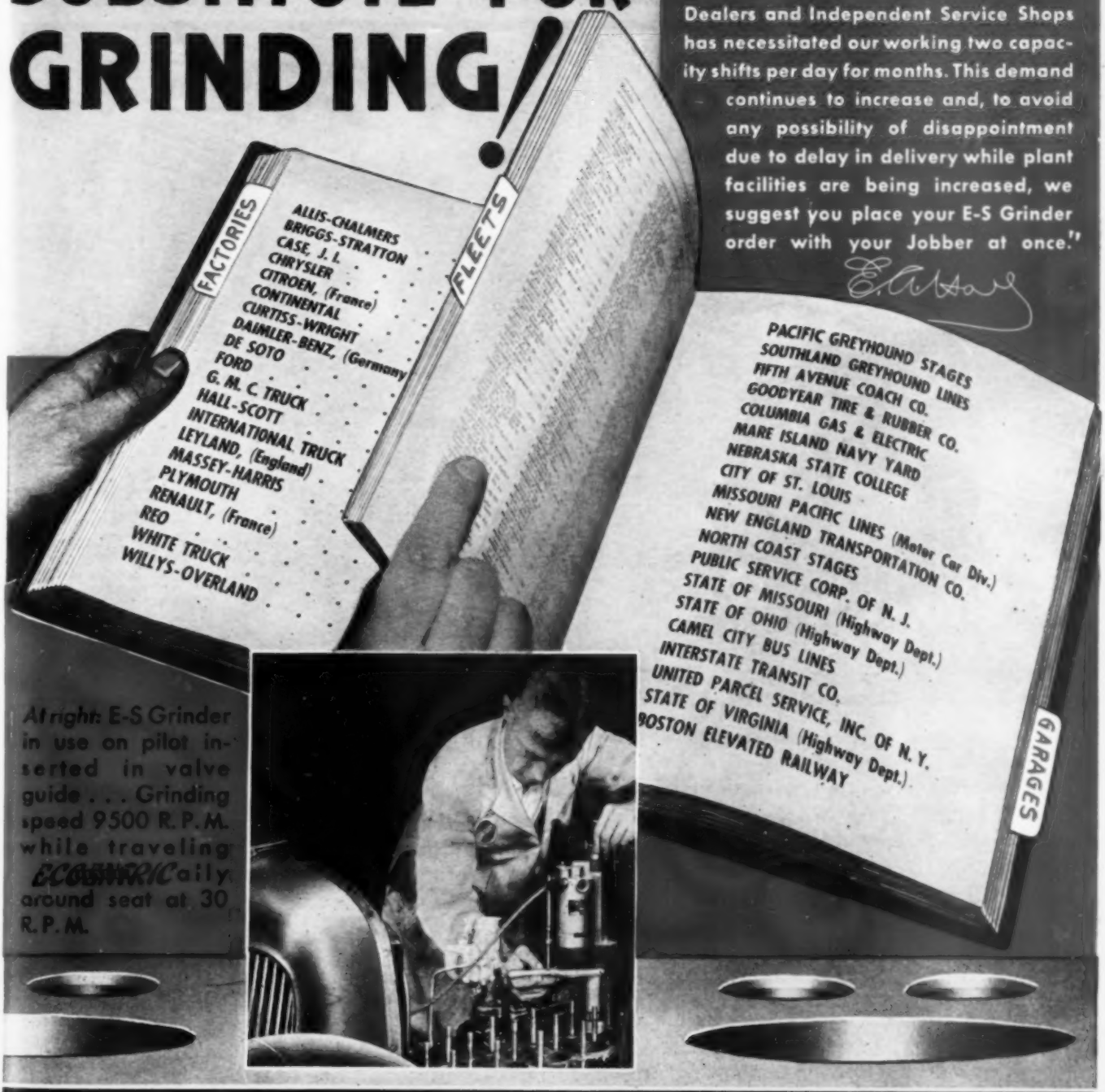

At right: E-S Grinder in use on pilot inserted in valve guide . . . Grinding speed 9500 R. P. M. while traveling ECCENTRIC ally around seat at 30 R. P. M.

Valve Seat Grinder

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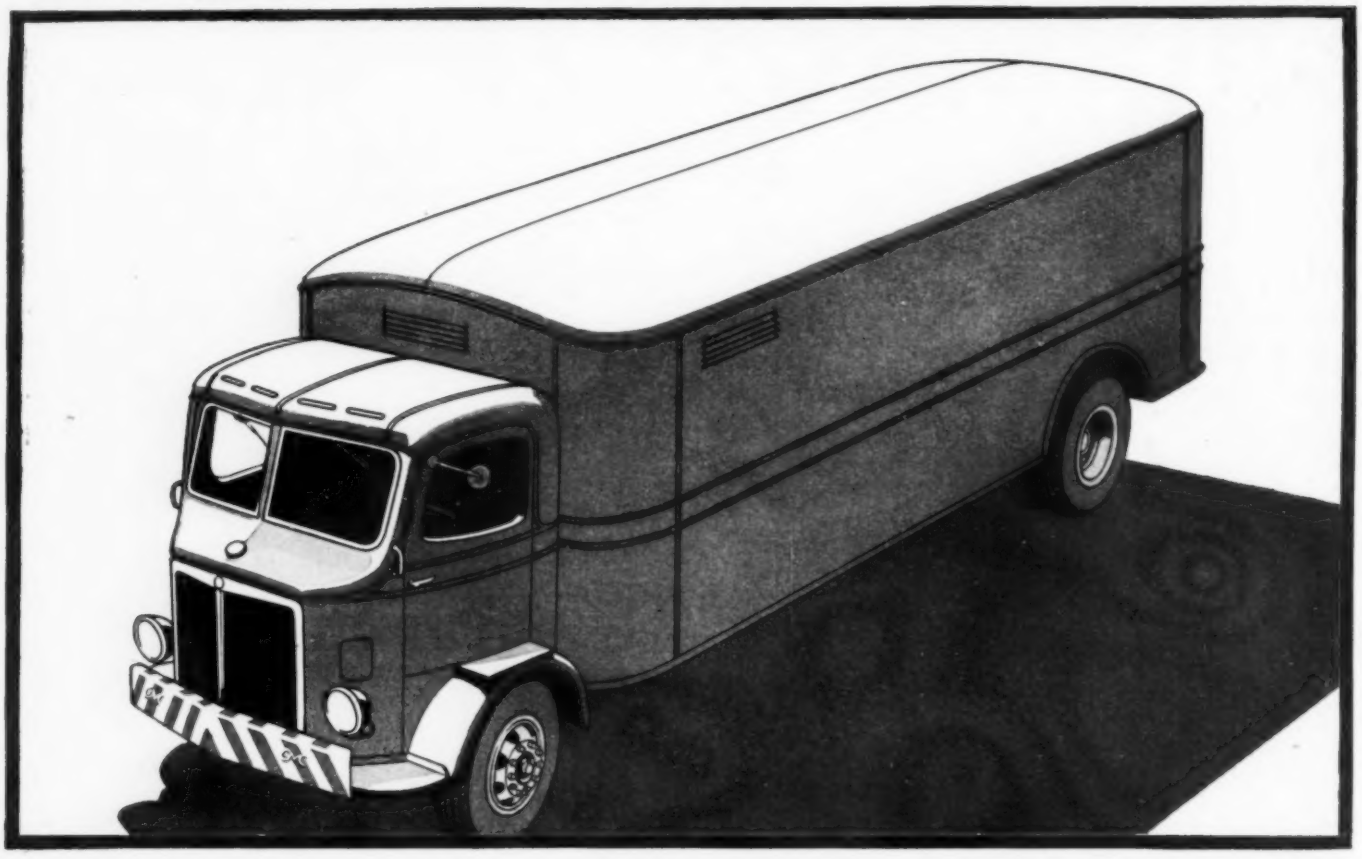
15,000 lbs. gross rating

T-75
24,000 lbs. gross rating

T-78
30,000 lbs. gross rating



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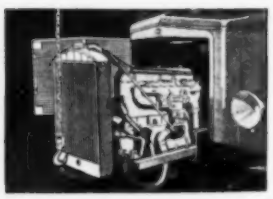
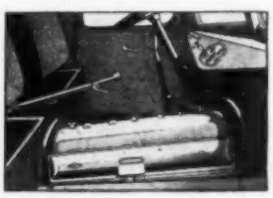
For complete details and prices, see the nearest GMC representative or write to the factory direct.

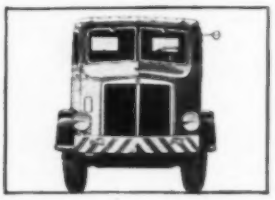


For major service, the entire engine rolls forward; it can be completely removed.



Adjustments can be quickly made by removing the engine cover inside the cab.

The cab is extra roomy and comfortable, with complete and modern ventilation.



Showing the clear vision and modern design, the grille giving access to the engine.

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GENERAL MOTORS TRUCK COMPANY — *Time Payments Available Through Our Own Y. M. A. C.* — PONTIAC, MICHIGAN

Say "I saw it in FLEET OWNER"—It Helps!

The

FLEET OWNER

Published Monthly in the interests of Automotive Fleet Owners who maintain their own Repair and Service Shops and devoted to the better Operation and Maintenance of Truck, Trailer, Bus, Passenger Car, Taxicab and all Automotive Fleets.

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Many leading fleet operators throughout the country use American Brakeblok exclusively on all their equipment, whether truck, bus or passenger car. The definitely longer life and comparative freedom from the necessity of adjustment makes American Brakeblok a very important factor in maintenance economy. Amazing mileage records are constantly being reported and in most cases only routine inspections and adjustments are required. The alloy-grid or mesh backing, by allowing deeper countersinking, adds to the thickness of usable material, and provides secure anchorage and precise installations.

American Brakeblok, the original non-fabric brake lining, is available in all forms—Rolls, Full-Coverage Sets, Keeper Type and Bolt-On Full-Coverage Type Brakebloks—for every type of service. Save money by standardizing on American Brakeblok. Write for information on any type of installation.

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- —made with an alloy backing that gives greater thickness of usable material—longer life—and better installations.

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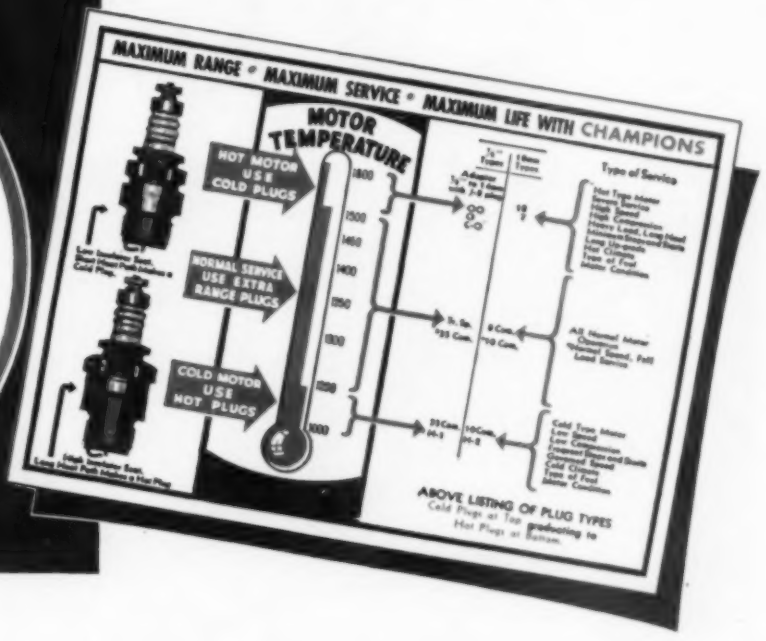
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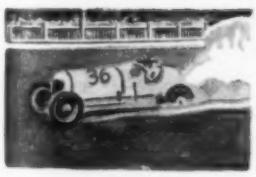

INDIANAPOLIS — *Louis Meyer, 1933 Indianapolis Race winner, won AAA Championship — 10th consecutive year Champion shared both honors.*

DENVER, COLORADO — *A Champion equipped Hudson-built Terraplane driven by Al Miller, broke all stock car records for the Pike's Peak Hill Climb.*

CEDAR LAKE, IND.—*Geo. Coleman established new all time speed record with Champion equipped outboard. Speed 61.75 miles per hour.*

DESENZANO, ITALY—*Francesco Agello broke world's aircraft speed record using Champions, at a speed of 426.5 M.P.H. — over seven miles per minute.*

WASHINGTON, D. C.—*George Reis' El Lagarto won President's Cup using Champions after also winning National Sweepstakes and Gold Cup.*

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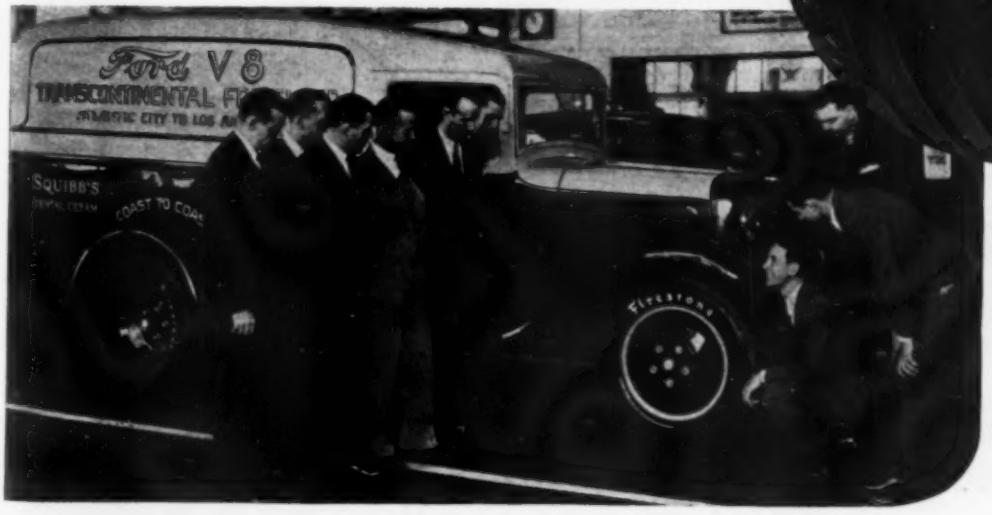

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● Equip your fleet of trucks today with new Firestone High Speed tires and learn what dependable, low cost service these record-breaking tires will give in *Your Operations.*

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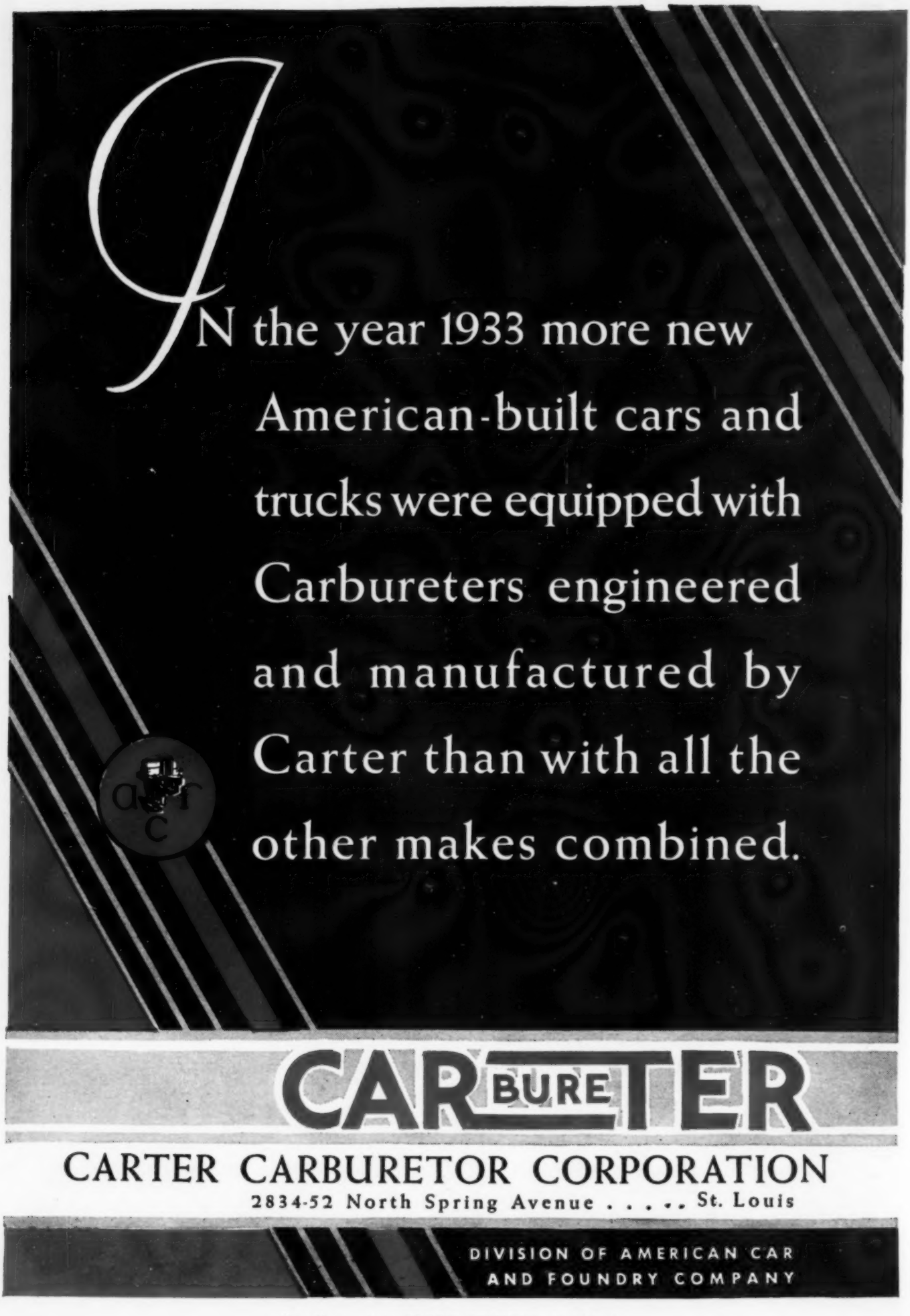
IN the year 1933 more new
American-built cars and
trucks were equipped with
Carbureters engineered
and manufactured by
Carter than with all the
other makes combined.
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Say "I saw it in FLEET OWNER"—It Helps!

VOL. 12
NO. 3

The FLEET OWNER

MARCH
1934

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF TRUCK, TRAILER, BUS, TAXICAB, PASSENGER CAR, AND ALL AUTOMOTIVE FLEETS.

Stripping *the* Thread » »

(The Editor's Column)

Breathes there a man with soul so dead,
Who never unto himself hath said,
When on a bolt, he stripped the thread:
"**...%x ')x***2 v¼"*"**"

ENGINEERS ELABORATE

• One of the advantages of living in Metropolitan New York lies in the fact that you can conveniently attend the S. A. E.'s "Met. Section" meetings. Last month this organization was fortunate enough to hear engineers from nine leading truck factories in a symposium on *"How Engineering Design Reduces Truck Operation-Maintenance Costs."* We, of course, were there and went home with several new thoughts. One interesting point brought out was that cracks between valve seats and cylinder bores can be minimized by beveling off the top of the block—in other words putting a radius on the extreme end of the bore that faces the valve seats. One of the valve-in-head exponents suggested that if all turned to overhead valves we wouldn't have to worry about such things. He also declared that with o'head valves, hardened valve seats are unnecessary. Interesting, if true. Why do we need them at all? Not because the seats pound out, but because of temperatures. It would be well to watch future developments in this direction. Hardened valve seats seem to be here to stay, the foregoing assertion notwithstanding. Perhaps future combustion chamber design will render them unnecessary. We'll be watching with you.

•

RE COLLOIDAL GRAPHITE

• Many letters have been received of late, asking for the "real low-down" on various auxiliary lubricants, particularly those oils which, the directions say, should be poured into the gas tank or mixed with the crankcase oil. Their graphite content, it seems, is the source of much concern, some operators actually believing that the graphite might be abrasive. Natural graphite is "some slick"—so is river mud, as anyone who has ever hauled in an anchor will readily corroborate. But it does not follow that because river mud is abrasive, graphite must also be. But to refer to it just as "graphite" would not be doing justice. Graphited lubricants have long performed faithfully in transmissions, rear-ends and universal joints, to say nothing of the many other applications in this and other industries. But the "colloidal" graphite that is a component of many of the auxiliary lubricants now on the market is an entirely different thing—different as is gold leaf than the ore, or even as black from white. In order to set the entire fraternity right, we've commissioned a person who "knows his colloids" to tell you something about colloidal graphite, which you'll find in many of the auxiliary lubricants that are now on the market. We have no opinion on this subject. What we believe to be facts are stated fully in the article on page 34 of this issue. We've tried to keep it free from technicalities. You'll be reading it, won't you?

•

A BIT PREMATURE?

• Operators on the Pacific Coast have become all hot and bothered during recent months, all because a handful of them have done some experimental work with a new motor fuel, Butane Gas, and certain savings seem to accrue therefrom. In response to the many inquiries that we are receiving, nothing on the subject has appeared in this publication to date, and *nothing will*, until the bugs have been ironed out and the fuel itself becomes accessible on a national basis. Even the major oil companies on the Coast seem reticent on the subject. "There is very little, if any, authentic information available on this subject at the present time . . ." writes one of them. Since the utilization of Butane is so closely tied to the availability of the fuel itself, we do not believe it important enough at the present time to burden you with a lot of information that will only steam you up and then leave you out in the cold. We've "bitten" on new developments of this kind in the past and learned our lesson. You may rest assured, however, that when (and if) the proper time comes, we'll recognize it as our duty to lay all the facts before you.

•

WRITE YOUR MAN TODAY

• Senator Capper of Kansas has obligingly introduced a bill at Washington calling for the discontinuance of the 1c Federal gasoline tax. At the time of writing this, the matter is under consideration by the House Ways and Means Committee. It is expected that this will be reported to the House immediately. Every fleet operator is urged (and this means you) to immediately write, wire or phone to his Congressman and Senators, bringing pressure to bear on this important measure. Everything that you can do may help. And we hope that this suggestion reaches you in time for you to act.

•

MISTAKEN IDENTITY

• Then there was the dumb mechanic who thought that a valve lifter was one of those guys who comes into the shop at night and steals all the valves.

•

H. Clay Fischer
Editor

•

Operating a Public-Utility Fleet

By R. J. Collins,
Supt. of Transportation, Kansas City Power & Light Co., Kansas City, Missouri

Part I: Transportation from a Public-Utility Standpoint • How Our Diversified Fleet of 156 Assorted Vehicles is Operated

THE operation of a group of trucks and passenger cars in a fleet such as that of the Kansas City Power & Light Company presents some interesting problems. The work performed is of such a wide and varied type, as to provide a contrast to that of other fleets.

At present our fleet consists of 76 passenger cars and 80 trucks. The big majority of the passenger cars are Chevrolet coupes, while in the trucks a large variety of makes, models, and sizes prevail. The capacity of these units ranges from ½-ton sedan delivery cars to 5-ton trucks. The work performed by the various units can be classified as follows:

1. Passenger cars for meter-reading, meter-setting and meter-testing.
2. A group of pool cars for maintenance and operation men working on the system.
3. General hauling trucks.
4. Overhead line trucks.
5. Tree-trimming trucks.
6. Underground maintenance and construction trucks.
7. Service installation trucks.
8. Hot-shot trouble trucks.
9. Patrol trucks.
10. Home sales and merchandise delivery trucks.

These trucks call for special bodies and equipment in many cases. Probably the most completely equipped truck is one used for setting poles. It has on its chassis a Buda earth-boring machine; a hydraulic gin pole (3 section), capable of setting 80 ft. poles; a 10,000-lb. winch; and 82-cubic-foot air compressor handling 2 paving breakers or rock drills. This is used where rock is encountered and also for tamping ground after the pole is set. When hauling poles, a two wheel semi-trailer is used in back of a truck. We have 17 of these in service.

Rear view of line-body built in own shop. This is typical of the tarpaulin-covered jobs used for electric line work.

Our line bodies are all built in our own shop. They are of course specially built to answer our own requirements. I might mention that these trucks are used mostly as moving storehouses. They cover relatively few miles, sometimes going out on a construction job and standing all day. We are using 2-ton trucks on this work, having an average gross weight of 13,000 lbs. Our heavy construction gangs are getting fewer each year. We do have some 3½-ton trucks on this work which have an average gross weight of about 20,000 lbs. Our tree-trimming gangs use 1½-ton trucks with large bodies and tarpaulins for hauling brush.

Our general hauling trucks vary from 1-ton to 5-ton and, as their name implies, are pool trucks, hauling anything from a transformer to stationery supplies.

Our underground trucks are equipped with winches for pulling cable, splicers' tools, pumps for pumping out manholes, and fault finding equipment for detecting shorts in cable. A four-wheel trailer carries a Kenotron testing outfit for testing cable. It has a capacity of 150,000 lbs., weighs 24,000 lbs., and is 21 feet in length. (*construction of trailer*).

Our hot-shot trucks are mostly sedan delivery bodied cars for hauling fuses, wire, lamp bulbs, etc. Our patrol cars are used to inspect lamps on boulevards downtown, traffic-control lights, etc. All globes are maintained by

(*Please turn to page following*)

1 Heavy steel mounting plate — cadmium plated against rust.
2 Brass low tension terminal nuts—for screw-driver or wrench—lock-washer.
3 Extra long flash-over distances.
4 Screw-type, insulated, lock connector for high tension terminal.
5 Soft rubber shroud protects high tension terminal.
6 Heavy moulded insulator.
7 Heavy brass sealing ring keeps out dust and moisture.
8 Can also be mounted direct by removing this plate.
9 Rugged cast-iron housing increases efficiency. Insures low temperature. Wt., 5 lbs.

WALLOP-POWER-PEP!

HERE is the heftiest coil you've ever seen. It was developed deliberately for the toughest ignition job there is—service on buses or trucks.

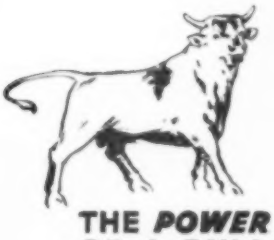
This new American Bosch Big Brute Coil has the power of a bull! It shoots a big, extra-powerful, super-spark so that your bus or truck starts easier—gets away faster—accelerates snappier—runs livelier on the road—responds with the punch and wallop of a champion.

The American Bosch Big Brute Coil has the energy of a tiger—reserve energy to spare, insuring the same efficient ignition even at the highest operating speeds. And with the high speed 6 or 8 cylinder engines in use today, reserve energy is especially important!

The American Bosch Big Brute Coil is as faithful as a dog! Rich mixture... lean mixture... it continues to fire the same "big brute" spark across the spark plug gap, even if electrodes are badly worn. The rugged cast iron housing of the Big Brute stands the rough handling of this type of service.

Examine the features illustrated above. Did you ever see such armored, trouble-proof construction? Hadn't you better look into the possibilities of the Big Brute for your own fleet? The coupon below will bring you new folder and complete information.

THE *ENERGY* OF A TIGER—



THE *POWER* OF A BULL—

THE *FIDELITY* OF A DOG—

AMERICAN BOSCH Big Brute COIL

UNITED AMERICAN BOSCH CORPORATION, SPRINGFIELD, MASS. SEND BOOKLET ON SUBJECTS CHECKED:

PRODUCTS manufactured by the UNITED AMERICAN BOSCH CORP., bear the trademark shown above.

PRODUCTS OF UNITED AMERICAN BOSCH CORPORATION

- ☐ American Bosch Big Brute Coil
- ☐ American Bosch Condensers
- ☐ American Bosch Condens-O-Scope
- ☐ American Bosch Magnetos
- ☐ American Bosch Car-Radio

PRODUCTS OF ROBERT BOSCH A. G.

- Bosch Rapid Transit Magneto ☐
- Bosch Windshield Wipers ☐
- Bosch Semaphores ☐
- Bosch Vibro-Balanced Horns ☐
- Bosch Volt-O-matic Generators ☐ (25)

PRODUCTS manufactured by ROBERT BOSCH A. G., bear trademark shown above. Sold by United American Bosch Corporation.

WRITE NAME AND ADDRESS IN SPACE BELOW

Say "I saw it in FLEET OWNER" to Holtzer

A "HOW-WE-DO-IT" ARTICLE *(Continued)*

Special electric truck with tower for replacing and cleaning lamp bulbs and globes in city work. Note that a parked car does not interfere with its work.

Standard 1½-ton truck body with special compartments for tools and other light equipment. The special compartments shown were built in the company's shops.

this company and it is necessary to keep two trucks equipped with towers on the street. These trucks are Walker Electric trucks equipped with Exide Ironclad batteries and using Seagrave towers. They have proved very satisfactory and can get 28 ft. in the air, revolve 360 deg., and when lowered are only 11 ft. above the ground. Some 6,000 globes in town are cleaned in this manner.

Lastly, our delivery trucks are used to deliver electric equipment, such as radios, lamps, washers, etc., when they are sold. The home sales trucks are used in house-to-house canvassing with crews of men selling electrical equipment in the home and replacing lamp bulbs at a nominal figure. This in general covers a sketch of our fleet, what it consists of, and what it does.

A definite safety program has been mapped out for our drivers, with the help of our insurance company and the Kansas City Safety Council. Through these two agencies awards to no-accident drivers for 1 year are made in the form of cards, and tags for the cars. Trucks are recognized by placing a metal plate on the side of the truck. In addition, all truck drivers are given a vacation with pay when completing a year without an accident.

Above the door, coming into the garage, we have placed a large board on which we list all accidents for the month and also, the total for the year to-date. We make considerable use of posters for our bulletin boards in the garage and on the trucks. As a result, our accidents for the past year have steadily decreased; last year the decrease amounting to 26 per cent. This year the decrease over last year will be even greater. (1933).

In closing my article on operation, I have a few statistics regarding the company, which may be of interest.

Number of customers.....133,000
Sq. miles served 3,800
Electric output .....55,000,000 KW HRS per year
Serve, electric, steam, water, coal .....
Transportation equipment..$305,000
Miles travelled, including employees cars....3,500,000
Gasoline consumed .....270,000 gallons
Total spent in operating fleet.
(1933) $193,888.00

(Editor's Note: Having now familiarized ourselves with the operation of this diversified fleet, we will have the opportunity of reading next month how it is maintained. In his next article, Mr. Collins will discuss the subjects of Operating Costs and Maintenance Procedure, as practiced by the Kansas City Power & Light Company. You'll be watching for the article, won't you?—H. C. F.)

This outfit is perhaps the most completely equipped truck in the fleet. It has an earth-boring machine, hydraulic gin-pole, winch and air compressor. It can handle 80-foot poles. A two-wheel trailer is used for hauling the poles.

New Interest

THE indications are that there is new interest in spark plugs being manifested by fleet operators throughout the country.

As a matter of note, one of the leading makers is soon to announce an entirely new line of plugs.

For this reason, the questionnaire on page 53 of this issue, should be of interest, particularly since it deals also with the smaller sizes of plugs, recently introduced. Won't you help by responding?

PORTABLE POWER —the Profit Raiser

Shops, garages, service stations use Blackhawk Hydraulic Jacks to speed up jobs and build up profits.

When there's a rear wheel to lift—a frame member to straighten — or an axle to bend — a Blackhawk supplies the power, and "makes it snappy".

Nowadays no shop is well equipped without a number of Blackhawk Hydraulics. Clever mechanics find new jobs for them daily — there's no limit to their usefulness.

Blackhawk features are: Tremendous power, great ease of operation, hairline accuracy of control, absolute safety for work and operator, and trouble-proof ruggedness.

Ask your Jobber Salesman. Write us for literature about the complete line, 1 to 75 ton capacities.

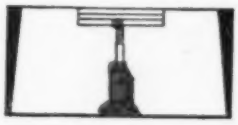
BLACKHAWK MANUFACTURING CO., Milwaukee, Wis.

LIFTING

Easy, short or long strokes of the handle raise the load—a turn of the release valve lowers it. Micrometer accuracy of control.

BENDING

Simple fixtures and a Blackhawk will handle a wide range of straightening and bending jobs in the shop. Our 7-ton model is a favorite for this.



PRESSING

A wide range of light press work is easy for a Blackhawk Hydraulic. It operates vertical or horizontal. With a small extra fitting it works inverted, too.

CB 9—7 Ton
Hydraulic. One of our 20 Hand Jacks.

HYDRAULIC JACKS BY BLACKHAWK

Say "I saw it in FLEET OWNER"—It Helps!

Announcing NEW KOOLMOTOR

REDUCED 2c *to regular gasolene prices*

The greatest news of the year for all operators of commercial vehicles

CITIES SERVICE offers with pride these two new gasolenes . . . perfected through the greatest research in automotive history. Their use plus Power Prover Service assures a new high in performance, a new high in economy.

A BIG JOB

Three years of intensive research were spent in four separate fields. 500,000 car owners were interviewed. Special power tests were made on an additional 250,000 cars of all makes and ages with the Cities Service Power Prover. Engineers and builders of America's leading cars and engines were consulted. Daily experiments were conducted in the great practical laboratory afforded by the Cities Service fleet of more than 4,000 cars, trucks and buses.

THE RESULT

Out of all this grew these two great new gasolenes—the new Koolmotor and Cities Service Ethyl. We learned how to build gasolenes with the six features that give you top motor-performance... and the greatest value for your money ...instant starting, lightning-fast pickup, tremendous power, clean burning (full-firing), long mileage and real anti-knock.

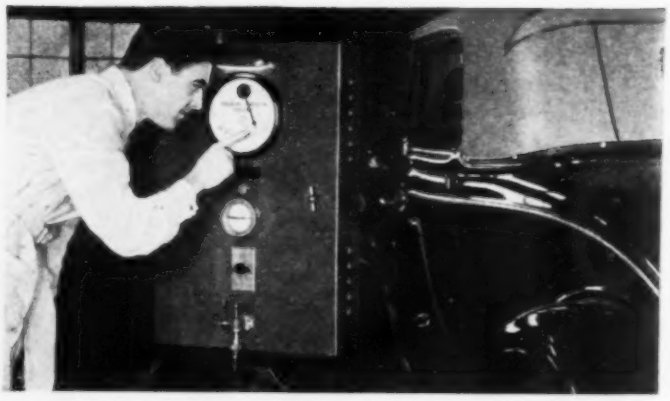
NOW TRY THEM

These two new gasolenes are ready today at all Cities Service stations and dealers and for bulk delivery. The best test of their new performance is for you to try them out in your buses, trucks and business cars. Then you will see what has been accomplished.

RADIO CONCERTS—*Fridays at 8:00 p.m., E.S.T., over WEAF and thirty-three N.B.C. stations*

HERE'S HOW THESE "FULL-FIRING"

WE ASKED THE MAN WHO DRIVES . . . One of the special Cities Service investigators questions a driver on what he expects and wants from gasolene. This interview is typical of the 500,000 obtained in three years . . . "case reports" to help in making Cities Service gasolenes even better!



POWER PROVER HELPS OUT . . . And two more years were spent in making actual tests of performance on the Power Prover . . . a new-type "mechanical doctor". More than 250,000 running motors of all makes and models were studied, tuned and adjusted. From it many economical fuel facts for you were learned.

Say "I saw it in FLEET OWNER"—It Helps!

CITIES SERVICE ETHYL

the new champion of Ethyl gasolenes

SEND FOR THIS FREE *"POWER PROVER"* INFORMATION!

Hundreds of truck and bus operators in every line of industry have learned that Power Prover Service not only cuts fuel costs, but actually reduces repair bills and other maintenance costs. If you do not know the full story of the Power Prover, write for information immediately. It means money in your pocket! Address your request to Cities Service Power Prover, Room 702, 60 Wall Street, New York City.

THE CITIES SERVICE BIG THREE

NEW KOOLMOTOR

The famous high-test, anti-knock green gasolene, for which hundreds of thousands have gladly paid 2 cents premium . . . now yours at no premium.

CITIES SERVICE ETHYL

The new champion of Ethyl gasolenes . . . fast, tremendously powerful . . . a super anti-knock gasolene. Backed 100% by the Cities Service name and reputation.

CITIES SERVICE POWER PROVER

The exclusive Cities Service invention that instantly detects unnecessarily wasted fuel and power. Combined with the 23-step Cities Service tuning routine, using exclusive patented precision tools, it stops this waste, saves gas and oil, eliminates excessive overhauls, lowers maintenance costs and reduces carbon monoxide.

GASOLENES WERE "CUSTOM-BUILT" FOR YOU!

THEY TOLD US THEIR STORY . . . Leading engineers, designers and builders of motor cars gave us facts and findings on what was needed for the ideal gasolenes. Out of this close co-operation came important help in making two new Cities Service gasolenes.

LOOK! ONE OF 4,000 DAILY TESTS . . . In our own road laboratory—4,000 Cities Service cars, trucks and buses—we tested, experimented with, studied gasolenes. From such a perfect proving ground came indisputable evidence of the superior performance of the new Koolmotor and Cities Service Ethyl. Could they fail to be perfect?

Say "I saw it in FLEET OWNER"—It Helps!

Maintaining *the* John Wanamaker Fleet

By H. Clay Fischer
Editor, FLEET OWNER

"Where Service Counts" is the Slogan Adopted and Lived Up To, By This Prominent Philadelphia Store, Its Garage and Service Station

SOME time ago, as reported on our Editorial page, the writer had the pleasure of visiting the fleet garage of John Wanamaker, Inc., in Philadelphia, Pa. At 23rd and Walnut Streets they have a seven-story building, including two basements, which covers an entire city block. Besides the fleet garage, in this building are housed their Warehouse and Delivery Distributing Station; and also a general parking garage and "super-service station" for the use of the general public. The motto of the last mentioned establishment is "Where Service Counts!"

That this motto is carried out in their self-maintained fleet service department, goes without saying. After parking our car in the super-service station (one can't park on the business streets of Philadelphia, you know) we were escorted to the fleet manager's office on the 6th floor and had the pleasure of meeting Mr. F. C. Fiechter, whose article on brake applications you have no doubt read in our January issue. The fleet service office fairly bristled with maps, photographs, charts, record files, etc. Several clerks, in addition to Mr. Fiechter's assistant, were busily occupied.

Before going through the building Mr. Fiechter briefly outlined to us a few of the special ideas which he has worked out over a period of years with the Wanamaker fleet. These include a practical inspection system; a method of rust-proofing practically all chassis parts where physically possible; many special ideas in body design and construction; ingenious features built into bodies to facilitate loading and carrying merchandise; oil reclaiming and analyzing systems; special recording devices and clocks; electric brake counters (see January issue); home-made oil level gauges; various testing apparatus, special tools and shop equipment; safety devices and signals; and numerous other individual developments. As a matter of fact, it is our plan to present an entire series of articles in the near future, each of which will fully cover one of the singular developments just mentioned.

Another of the Wanamaker fleet's outstanding achievements consists of their studies and research work in connection with the tire situation. Their records cover a period of eleven years, every detail being recorded and condensed into a simple resumé each year. We also hope to be able to outline this system in the near future.

For want of a better illustration, here is one of the John Wanamaker panel delivery jobs. It's mounted on a husky chassis (you can guess the make) and you ought to see the excellent finish of it.

The latest cab-over-the-engine models have nothing on this compact electric, with roomy furniture van body. At least, so far as load distribution is concerned, anyway.

Our first step from the office brought us into the body shop, where a special body was in the process of manufacture. (Wanamaker builds most of its own bodies, you know.) The next stop was the unit and blacksmith shops, where several mechanics were busily engaged in various operations, such as salvaging parts, building special devices, and overhauling and rebuilding units.

Another man was inspecting, calibrating and testing spark plugs; still another mechanic was making some special part for a tractor. The blacksmith was rectifying a bent front axle, which had been damaged in an accident. This shop contained numerous machines and special tools used in the work, most of which our readers are already familiar with.

We then went to the inspection department where mechanics were busily occupied in working on motors, and other details. An inspector was making tests of exhaust gases with an air-fuel ratio analyzer. Another inspector was testing the alignment of front wheels of a truck with a special gauge. We found another fellow polishing a body with an electric polishing machine.

From here we were taken to the cleaning room where we observed tanks with chemicals for cleaning parts; also a very unique and complete oil reclaiming plant, consisting of three large overhead settling tanks, an oil reclaiming machine, and several oil sample racks; also special receivers for oily rags, transmission and rear-end drainage. A complete radiator flushing machine was called to our attention. Radiators are flushed

(*Please turn to page* 22)

THE CORRECT PISTON RING

FOR EVERY "CONDITION"

Pedrick

HEAT-SHAPED

PISTON RINGS

Fleet operators know that the same ring installation will not cure every oil job. Pedrick's Technical Service Division helps you select the correct ring installation for every engine condition —supplies you with expert knowledge which will make every job successful.

No line of piston rings has ever been produced to equal the Pedrick line for completeness and ability to meet all piston ring problems. Pedrick provides the correct type or combination of types for every conceivable "condition."

For complete information regarding the Pedrick Technical Service for fleet operators, mail us the coupon today.

MAIL COUPON *today!*

Wilkening Manufacturing Co.
2000 S. 71st Street, Philadelphia, Pa.

Please send me complete information regarding Pedrick's Technical Service for fleet operation.

Name.....

Address.....

City..... *State*.....

FO

Wilkening Manufacturing Co.

Philadelphia

Say "I saw it in FLEET OWNER"—It Helps!

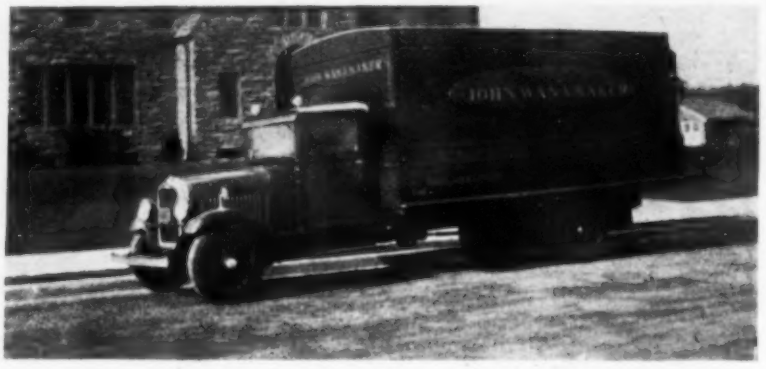
HOW THEY DO IT IN PHILADELPHIA (*Continued*)

and cleaned semi-annually.

It may be well to mention here that seldom have we been in a cleaner and tidier fleet service station. Each mechanic is required to use special drip pans under any part of a truck on which he may be working. These pans are replaced with clean ones from time to time by a "porter".

Next we were escorted to the paint shop where we inspected the largest van body ever built for department store use. It is 24′ long by 8′ wide and 8′ high. There were a number of cars there in the various stages of being refinished. Anyone familiar with the Wanamaker fleet well knows that they are among the finest products turned out of a paint shop, when it comes to finish. They have a special varnishing room, flanking which is their trimming shop.

From the paint shop, we went to a special room about 12′ x 24′ which is fitted out as a sort of laboratory. There we saw settling tanks for experimental work in crank-case oils and drainings; also a rack containing several hundred small test bottles containing samples of crank-case drainage, reclaimed oil, test samples from numerous tests made of oil filters on motors, samples of greases, etc., outstanding of which is a series of colored greases of which Mr. Fiechter is the originator. He told us that colored greases have been used for nearly four years. The colored greases are vastly interesting both for their uniqueness and practicability of their use for control and checking. This is another subject that we are expecting to cover in detail in one of the forthcoming articles.



DELIVERY of merchandise in and around the swanky suburbs of Philadelphia is the lot that has befallen this attractive vehicle of the Wanamaker fleet. But you ought to see their newest tractor-semi-trailer jobs, with one of the best-looking makes of truck chasses doing the hauling. They're the last word in department store equipment, with full complement of lights, hydraulic brakes with booster attachment, automatic couplers, and last but not least, special electrical connections between tractor and trailer which are a product of the Wanamaker fleet laboratory. It's unfortunate that the excellence of the paint jobs does not show up in these black-and-white photographs.—H. C. F.

There were numerous test plates of various kinds of paints and finishing materials with which they have been experimenting and on which Mr. Fiechter has conducted an extensive research. Also there were numerous filtering elements removed from a half-dozen different makes of oil filters of motors. It was interesting to note the great variance in the condition of the different ones. Mr. Fiechter was rather reluctant in making statements about them because of not wishing to reflect upon the merits of products by different manufacturers.

We must get back to the subject of motor oils. They also have a special illuminated inspection device, in front of which a row of oil sample bottles can be placed, the bottles setting in a special form to hold same. When turning on the lights, a clear vision may be had of the contents in bottles, showing clearly the amounts of residue settled to bottom and the amounts of suspended matter. This was unusually interesting since it presents the results in such a simple but most effective manner, and we hope to be able to tell you more about it, and show you a picture of it, in an early issue.

The idea of oil reclaiming was first experimented with by Mr. Fiechter in 1922-23, but was given up on account of the opposition met with against reclaiming of oil because of fire hazards and for the want of further research. However, they have been reclaiming all of their oil since 1929 with splendid success. This subject shall be dwelt upon more generally in a future article.

In conclusion, it may be said here that any fleet owner, operator, or service superintendent would find a visit to the Wanamaker Service Station time profitably and pleasantly spent, since the usual Wanamaker courtesy may be found there, as well as in their great stores in Philadelphia.

●

Fleet Accident Campaign Gets Results

THE intensive campaign to reduce automobile accidents waged by Drake Bakeries, Inc., of Brooklyn, N. Y., during the past seven years, has accomplished the following results:

At their Brooklyn plant forty-six drivers were awarded Merit Certificates by the insurance company for periods of one to seven years without a chargeable accident, establishing a mileage record of 1,544,400 covering this period.

At their Bronx plant thirty-four drivers were awarded merit certificates for periods of one to six years without a chargeable accident with a mileage record of 1,018,520.

The above information comes to us through the courtesy of Mr. E. C. Balcke, Treasurer of the Corporation.

●

Motor Truck Directory Just Published

A REFERENCE book dealing with the traffic and operating problems confronting motor truck haulers and users of trucks in general has been published by Traffic Publishing Company. It is a 725-page volume, 8½ x 11 inches, with leatherette binding.

It is intended to serve the needs of truck operators, shippers, lawyers, accountants, and others interested in motor truck activities; a comprehensive publication on commercial highway transportation. The price is $10.00 and it may be obtained from Traffic Publishing Co., 100 Sixth Ave., New York City, or from Ferguson Publishing Co., 90 West St., New York, N. Y.

IT'S A SHAME HOW BADLY MY PANEL FLEET LOOKS, BILL. AND I HAD THEM REFINISHED LESS THAN A YEAR AGO
I HAD THE SAME TROUBLE WITH OUR TANK WAGONS BEFORE I USED THE NEW VALENITE FINISH. MY TRUCKS STILL LOOK LIKE THEY'D JUST LEFT THE PAINT SHOP

NEW-TYPE FINISH LASTS TWO TO THREE TIMES LONGER

Remarkable new covering offers greater resistance to weather and abuse—cleans like magic—lowers painting costs because needs no polishing

PAINT costs are now *'way* down! Thanks to the amazing new Valenite finish that *armor plates* trucks, tank wagons, panel fleets. This modern vehicle finish retains paint shop gloss *twice as long* as the next best method—*three times* longer than the best old style varnish job. That means real maintenance economies.

SAVES TIME AND MONEY IN THE SHOP, TOO!

Valenite is quick-drying and speedy through the shop. But that isn't all the good news. Long, expensive hand polishing is unnecessary with Valenite. Think of it! This whole tedious process is *banished* (Valenite has extremely high gloss when applied and keeps this gloss during its entire life). Stands up equally well on wood, metal and composition bodies.

When the Valenite System offers you so much more, why waste money on finishes that go only part way? Start cutting *your* re-finishing costs now. Mail the coupon today for the whole interesting story about Valenite.

VALENITE
THE MODERN VEHICLE FINISHING SYSTEM
Consists of:
PRIMER
PRIMER-SURFACER
SURFACER
PUTTY
ENAMELS
CLEAR FINISHING

VALENITE *and* **Nitro-VALSPAR**

VALENTINE & CO.
386 FOURTH AVENUE NEW YORK CITY
12 Emily St., Cambridge, Mass. 20 North Wacker Drive, Chicago, Ill.
Makers of Valenite and Nitro-Valspar

VALENTINE & COMPANY— Dept. FO-3
386 Fourth Avenue, New York, N. Y.

Dear Sirs:
I am interested in knowing more about Valenite. Please send me a copy of "Valenite, The Modern Finish".

Name .....

Address .....

.....

Say "I saw it in FLEET OWNER"—It Helps!

Here is the most complete line of

Ask for complete details. You can obtain complete information about any or all of our products at any of the offices listed below. This list of sales offices and warehouses gives you, at the same time, a picture of this nation-wide organization and its resources for giving prompt, effective service whenever and wherever required.

SERVICE STATION EQUIPMENT CO.

Administrative Offices: Conshohocken, Pa.
Factories: Conshohocken, Pa., and Chicago, Ill.

SALES OFFICES (In U. S. A. East of Rockies)

ATLANTA, 205-101 Marietta St. Bldg.
BOSTON, 22 PARKMAN STREET BRIGHTON DISTRICT
*CHICAGO, 910 S. Michigan Blvd.
*DALLAS, 947 S. Lamar Street
*DETROIT, 1818 E. Woodbridge Street
FOREIGN DIV., Conshohocken, Pa.
*KANSAS CITY, 2020 Walnut Street
*MINNEAPOLIS, 1002 Market Ave.
*NEW YORK, 29 Broadway
*PITTSBURGH, 1330 Gulf Building
*ST. LOUIS, 700 Shell Building
TULSA, 601 Wright Building

Warehouses

Warehouses are located in all cities under "Sales Offices" that are marked *and also in—

BUFFALO, N. Y. RICHMOND, VA. OMAHA, NEB.
DENVER, COLO. OKLAHOMA CITY, OKLA. HOUSTON, TEXAS

Pacific Coast Division, Rheem Manufacturing Co.

RICHMOND, CALIF. PHOENIX, ARIZ. PORTLAND, ORE.
SEATTLE, WASH. LOS ANGELES, CALIF.

Service Station Equipment Co., Ltd. (Canadian Organization)

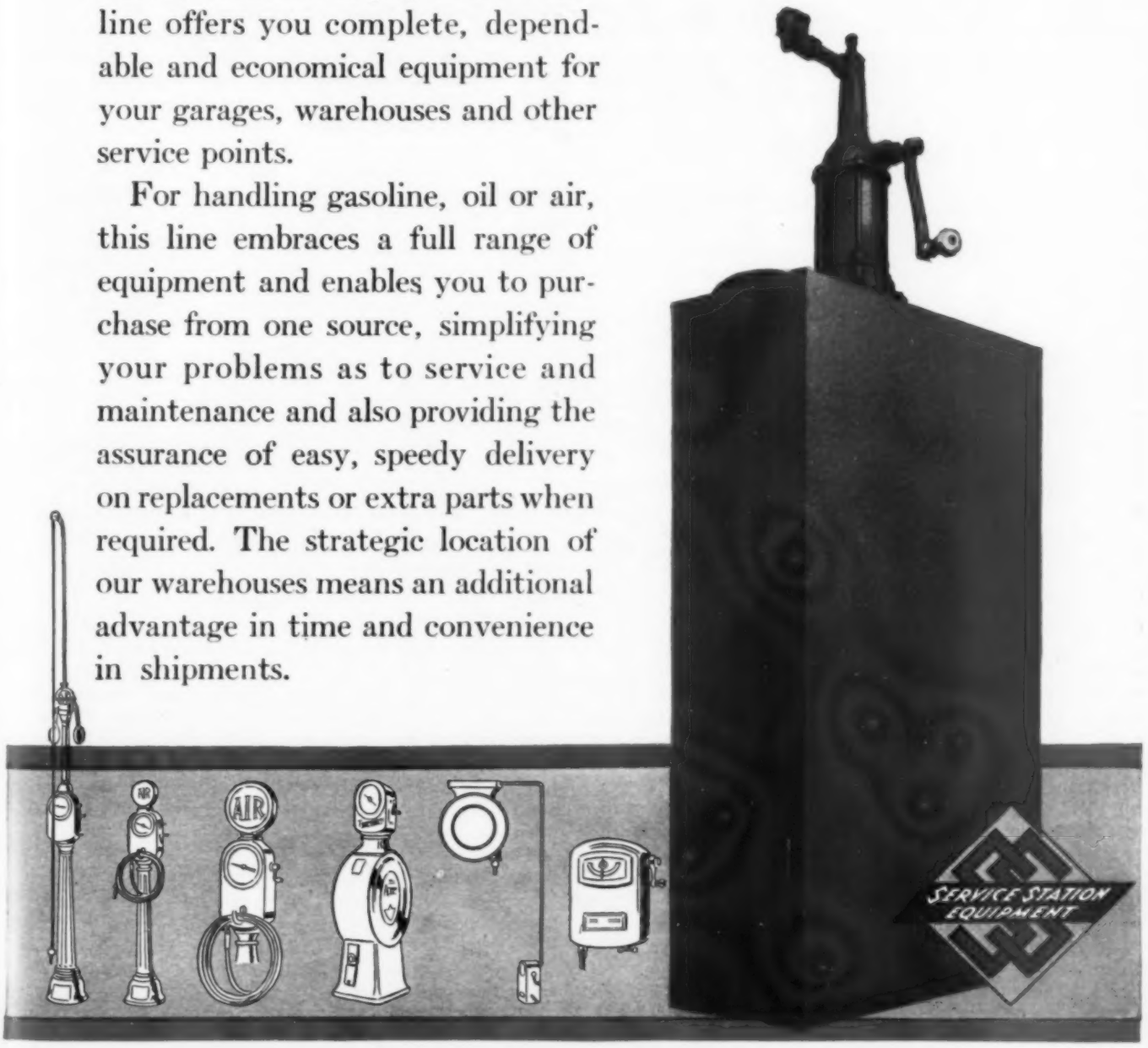
CALGARY, ALTA. . . . 605 11th Ave. W.
TORONTO, ONT. . . . 101 Hanson Street
REGINA, SASK. . . . 1233 Halifax Street
VANCOUVER, B. C. . . 824 Hornby Street
WINNIPEG, MAN. 1021 Winnipeg Avenue

MODERN, DEPENDABLE EQUIPMENT for those on whose shoulders rests the responsibility for efficient . . . economical management of fleets of motor cars, buses or trucks

The Service Station Equipment Company is a merger of several of the most famous lines of service equipment: Bennett Gasoline Pump, Eco Air Equipment (including automatic tire inflators and Gyro Air Compressors) and John Wood Greasing Equipment.

Now manufactured, sold and serviced under the one brand name—Service Station Equipment—this line offers you complete, dependable and economical equipment for your garages, warehouses and other service points.

For handling gasoline, oil or air, this line embraces a full range of equipment and enables you to purchase from one source, simplifying your problems as to service and maintenance and also providing the assurance of easy, speedy delivery on replacements or extra parts when required. The strategic location of our warehouses means an additional advantage in time and convenience in shipments.



By L. V. Newton,
Byllesby Engineering & Management Corp., Chicago, Ill.

Effecting Economies in the Fleet

Article VI: Getting Maximum Work-Hours Out of the Fleet • The Relation of Periodic Preventive Maintenance Inspections to Efficient Operation

"REPAIRS to Motor Vehicles" is one of the major items upon which we, as fleet operators, must center our attention. Our aim, of course, is to get every mile of service out of each part of a motor vehicle that the manufacturer built into it.

We must also devise ways and means of operating and maintaining our vehicles so as to keep them out of the repair shop. The most important element in fleet operation is the human one, the driver or operator. The education of those who operate vehicles is the only permanent means through which unnecessary expenses can be reduced; and a great deal of our repair expense today is unnecessary.

I have talked to a great many operators who tell me that they watch their expenses very carefully and personally supervise and authorize each expenditure. This only means that, after the damage is done, these operators see that the repairs are made promptly and at a reasonable cost; if, however, they had devoted their time to properly training the driver, the necessity for the repairs might never have arisen.

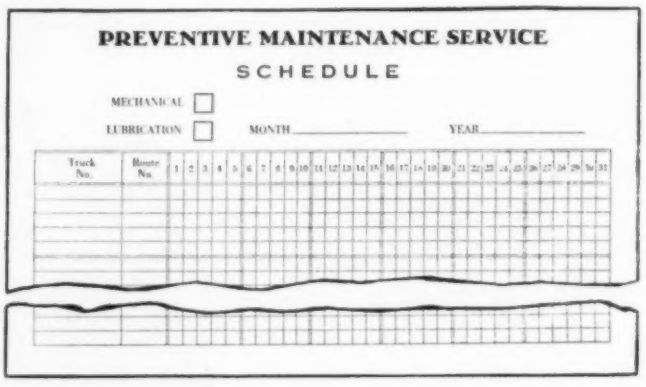
Road and climatic conditions, typography of the country, nature and size of loads carried,—all have a direct bearing on repair cost. More miles will be secured out of a vehicle operating on level paved highways than from a similar vehicle operated on rough mountain roads. Taking all factors into consideration, I do not believe that the average fleet operator gets the economical mileage out of his vehicles that he should; in other words, if he keeps the vehicle in service over an extended period, his repair cost is too high.

The driver or operator of any piece of motor equipment is the manager of it. The manner in which he handles the vehicle determines largely just how long it will last and how much it will cost to run. It is difficult for some drivers to appreciate this, and it is up to us, as fleet operators, to present the picture to them so that they understand it.

Regardless of how well vehicles are driven on the road, how adequately and thoroughly they are lubricated, they will require repairs of some form during their economic life, due to the natural wear and tear.

During the past 5 years, there has been a decided swing of the pendulum to preventive maintenance of motor vehicles. We have learned that it will extend vehicle life, reduce unit costs, provide a more even maintenance program with greater scheduling ability, and minimize road failures with their resultant costly interruptions of vehicular service.

The backbone of preventive maintenance is a scheduled periodic inspection of each vehicle, at which time it is washed, cleaned, greased and all needed repairs and adjustments made that can be done without removing it from normal service. Inspections are best scheduled in off-peak vehicle hours. Repairs found necessary that require removal of the vehicle from service are noted and scheduled to be made at a convenient time. If repairs are to be held to a minimum by preventing the need for repairs and checking small defects before they grow formidable in size, then all motor vehicles must be maintained according to a well-defined standard. It is essential that a definite plan of scheduled maintenance be established; also that the cooperation of the entire personnel be obtained.


PREVENTIVE MAINTENANCE SERVICE

SCHEDULE

MECHANICAL ☐

LUBRICATION ☐ MONTH_____ YEAR_____

Truck No.	Route No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

The development of a schedule for preventive maintenance inspection and lubrication is necessary, if the plan is to be a success. This form provides a schedule for each current month. It was designed to be used with the two forms illustrated on page 16 of our February issue. We'll be glad to send you further details on request.—Editor.

The majority of operators make periodic inspections of vehicles once a month, upon which from 1½ to 4 man-hours are expended, exclusive of washing time. Some inspect weekly, semi-monthly, every 2 months or every 3 months. Of those who inspect on a mileage basis, the majority have selected every 1,000 miles as the proper time, while a few do this work only at 2,000 mile intervals, supplemented by daily or in-between quick check-overs, greasings, etc.

The daily reporting of defects by drivers has been found valuable in realizing the maximum benefits from preventive maintenance, provided that defects are corrected promptly, and not allowed to accumulate until the vehicle's next periodic inspection date.

Periodic inspections can be established equally as well by fleets dependent upon outside maintenance agencies as by those on a self-maintenance basis.

In originally authorizing outside repair shops to

THE PIN FOR HEAVY DUTY-

Ordinary lapped finish after exposure to outdoor weather
Chrome-plated finish —offers same resistance to pitting, rust and corrosion in the engine

Thompson *Chrome-plated* Piston Pins tell their own economy story to fleet operators seeking lower maintenance costs. The extreme hardness of chromium and its low co-efficient of friction mean much longer wear for both the pin and piston pin bushings. Chromium's resistance to corrosion prevents the usual pitting and rusting by motor acids.

Thompson *Chrome-plated* Piston Pins are supplied in all oversizes. They come in perfectly matched sets, requiring only one adjustment of the reamer to install. They are sold by Thompson Products jobbers *at regular piston pin prices.*

THOMPSON PRODUCTS, Inc.

General Offices: Cleveland, Ohio, U. S. A.
Factories: Cleveland and Detroit.

Included in "The Distinctive Line": Thompson Valves; Graphited Valve Guides; Valve Seat Inserts; Pistons and Chrome Plated Piston Pins; Packless Pumps; Oilite Bushings; Tie Rods; Tryon and Silent U Shackles; Laminated Ford Brake Drums; King, Shackle and Tie Rod Bolts.

Thompson Chrome-Plated Piston Pins

Say "I saw it in FLEET OWNER"—It Helps!

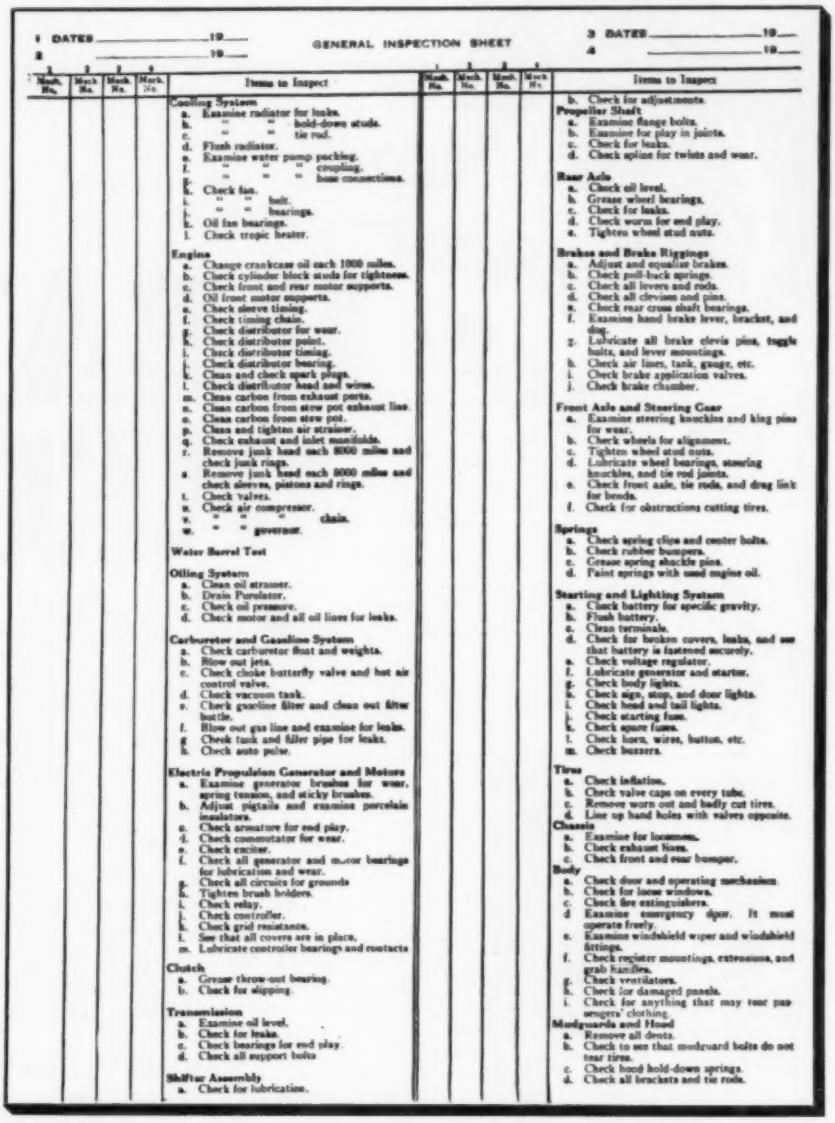
MAINTENANCE *and* INSPECTION METHODS *(Continued)*

perform periodic inspections, the fleet owner's desires as to the work to be done without specific authorization should be very clearly outlined and understood, preferably in writing, and certain general limits in scope of work or costs can easily be established so that the owner's authorized representative is consulted before proceeding with repairs that would be unjustifiable for any reason.

The fleet owner should develop and adopt an inspection routine and report or reports that can be used for all vehicles, whether maintained by himself or by outside agencies for him. This is necessary to insure efficiency control and knowledge of fleet condition as interpreted from inspection reports and charges. Outside maintenance agencies have been found willing to follow such a plan, and its results are often very satisfactory.

In some small operations certain essential maintenance work is frequently delegated to vehicle operators, such as washing, greasing, tightening up or simple adjustments. In any case, those responsible for vehicular maintenance should establish controls that guarantee correction of effects without delay, else preventive maintenance is only partial and the best results cannot be realized.

Inspections should be made at company or outside garages, preferably the former, where greater interest and responsibility are manifested for company-owned equipment and where adequate proper personnel and tool equipment are known to be available. Field or road inspections, made by traveling mechanical inspectors, due to obvious limitations are less desirable and should be used only where equipment cannot economically be maintained any other way. They may be used to advantage at long intervals to check the condition of vehicles maintained exclusively by outside agencies.



1 DATES _____ 19____
2 _____ 19____

GENERAL INSPECTION SHEET

3 DATES _____ 19____
4 _____ 19____

Mech. No. 1	Mech. No. 2	Mech. No. 3	Mech. No. 4	Items to Inspect
				Cooling System
				a. Examine radiator for leaks.
				b. " " hold-down studs.
				c. " " tie rod.
				d. Flush radiator.
				e. Examine water pump packing.
				f. " " " coupling.
				g. " " " hose connections.
				h. Check fan.
				i. " " belt.
				j. " " bearings.
				k. Oil fan bearings.
				l. Check tropic heater.
				Engine
				a. Change crankcase oil each 1000 miles.
				b. Check cylinder block studs for tightness.
				c. Check front and rear motor supports.
				d. Oil front motor supports.
				e. Check sleeve timing.
				f. Check timing chain.
				g. Check distributor for wear.
				h. Check distributor point.
				i. Check distributor timing.
				j. Check distributor bearing.
				k. Clean and check spark plugs.
				l. Check distributor head and wires.
				m. Clean carbon from exhaust ports.
				n. Clean carbon from stove pot exhaust line.
				o. Clean carbon from stove pot.
				p. Clean and tighten air strainer.
				q. Check exhaust and inlet manifolds.
				r. Remove junk head each 8000 miles and check junk rings.
				s Remove junk head each 9000 miles and check sleeves, pistons and rings.
				t. Check valves.
				u. Check air compressor.
				v. " " " chain.
				w. " " governor.
				Water Barrel Test
				Oiling System
				a. Clean oil strainer.
				b. Drain Purolator.
				c. Check oil pressure.
				d. Check motor and all oil lines for leaks.
				Carburetor and Gasoline System
				a. Check carburetor float and weights.
				b. Blow out jets.
				c. Check choke butterfly valve and hot air control valve.
				d. Check vacuum tank.
				e. Check gasoline filter and clean out filter bottle.
				f. Blow out gas line and examine for leaks.
				g. Check tank and filler pipe for leaks.
				h. Check auto pulse.
				Electric Propulsion Generator and Motors
				a. Examine generator brushes for wear, spring tension, and sticky brushes.
				b. Adjust pigtails and examine porcelain insulators.
				c. Check armature for end play.
				d. Check commutator for wear.
				e. Check exciter.
				f. Check all generator and motor bearings for lubrication and wear.
				g. Check all circuits for grounds
				h. Tighten brush holders.
				i. Check relay.
				j. Check controller.
				k. Check grid resistance.
				l. See that all covers are in place.
				m. Lubricate controller bearings and contacts
				Clutch
				a. Grease throw-out bearing.
				b. Check for slipping.
				Transmission
				a. Examine oil level.
				b. Check for leaks.
				c. Check bearings for end play.
				d. Check all support bolts
				Shifter Assembly
				a. Check for lubrication.
				b. Check for adjustments.
				Propeller Shaft
				a. Examine flange bolts.
				b. Examine for play in joints.
				c. Check for leaks.
				d. Check splins for twists and wear.
				Rear Axle
				a. Check oil level.
				b. Grease wheel bearings.
				c. Check for leaks.
				d. Check worm for end play.
				e. Tighten wheel stud nuts.
				Brakes and Brake Riggings
				a. Adjust and equalize brakes.
				b. Check pull-back springs.
				c. Check all levers and rods.
				d. Check all clevises and pins.
				e. Check rear cross shaft bearings.
				f. Examine hand brake lever, bracket, and dog.
				g. Lubricate all brake clevis pins, toggle bolts, and lever mountings.
				h. Check air lines, tank, gauge, etc.
				i. Check brake application valves.
				j. Check brake chamber.
				Front Axle and Steering Gear
				a. Examine steering knuckles and king pins for wear.
				b. Check wheels for alignment.
				c. Tighten wheel stud nuts.
				d. Lubricate wheel bearings, steering knuckles, and tie rod joints.
				e. Check front axle, tie rods, and drag link for bends.
				f. Check for obstructions cutting tires.
				Springs
				a. Check spring clips and center bolts.
				b. Check rubber bumpers.
				c. Grease spring shackle pins.
				d. Paint springs with used engine oil.
				Starting and Lighting System
				a. Check battery for specific gravity.
				b. Flush battery.
				c. Clean terminals.
				d. Check for broken covers, leaks, and see that battery is fastened securely.
				e. Check voltage regulator.
				f. Lubricate generator and starter.
				g. Check body lights.
				h. Check stop, stop, and door lights.
				i. Check head and tail lights.
				j. Check starting fuse.
				k. Check spare fuses.
				l. Check horn, wires, button, etc.
				m. Check buzzers.
				Tires
				a. Check inflation.
				b. Check valve caps on every tube.
				c. Remove worn out and badly cut tires.
				d. Line up hand holes with valves opposite.
				Chassis
				a. Examine for looseness.
				b. Check exhaust lines.
				c. Check front and rear bumper.
				Body
				a. Check door and operating mechanism.
				b. Check for loose windows.
				c. Check fire extinguishers.
				d Examine emergency door. It must operate freely.
				e. Examine windshield wiper and windshield fittings.
				f. Check register mountings, extensions, and grab handles.
				g. Check ventilators.
				h. Check for damaged panels.
				i. Check for anything that may rear passengers' clothing.
				Mudguards and Hood
				a. Remove all dents.
				b. Check to see that mudguard bolts do not tear tires.
				c. Check hood hold-down springs.
				d. Check all brackets and tie rods.

Speaking of inspection report forms, this is about the most complete and concise one of its kind that we have seen. Since it was designed for a bus operation (Public Service Coordinated Transport of New Jersey), there will be several units mentioned that are not found on every-day equipment, particularly trucks and light buses. Should you decide to follow this form in making one of your own, all that you have to do is use your blue pencil judiciously.—Editor.

After considering various inspection plans and reports, it would appear that the most desirable plan is to perform a major inspection every 90 days (2,500 to 3,000 miles), with light intermediate inspection every 30 days (1,000 miles). For the major inspection a detailed inspection report is necessary. For the minor inspection a less detailed report is necessary, the essential items being checking of distributor points, spark plugs, gasoline strainer, brake adjustment, lights, horn, windshield wiper, etc. Lubrication is also cared for at this time as well as thorough washing and cleaning of the vehicle if time permits. Insofar as possible, oil changes and lubrication of vehicles should be tied in with the inspection plan. It may be necessary, however, that vehicles be lubricated between inspection periods.

Inspection on a periodic time basis is most desirable from many angles. It permits the development of a schedule for each interval that can be adhered to without constant attention, enables positive control by the transportation department and, if the work is to be done by company maintenance forces, permits the scheduling of an even flow of work at each point.

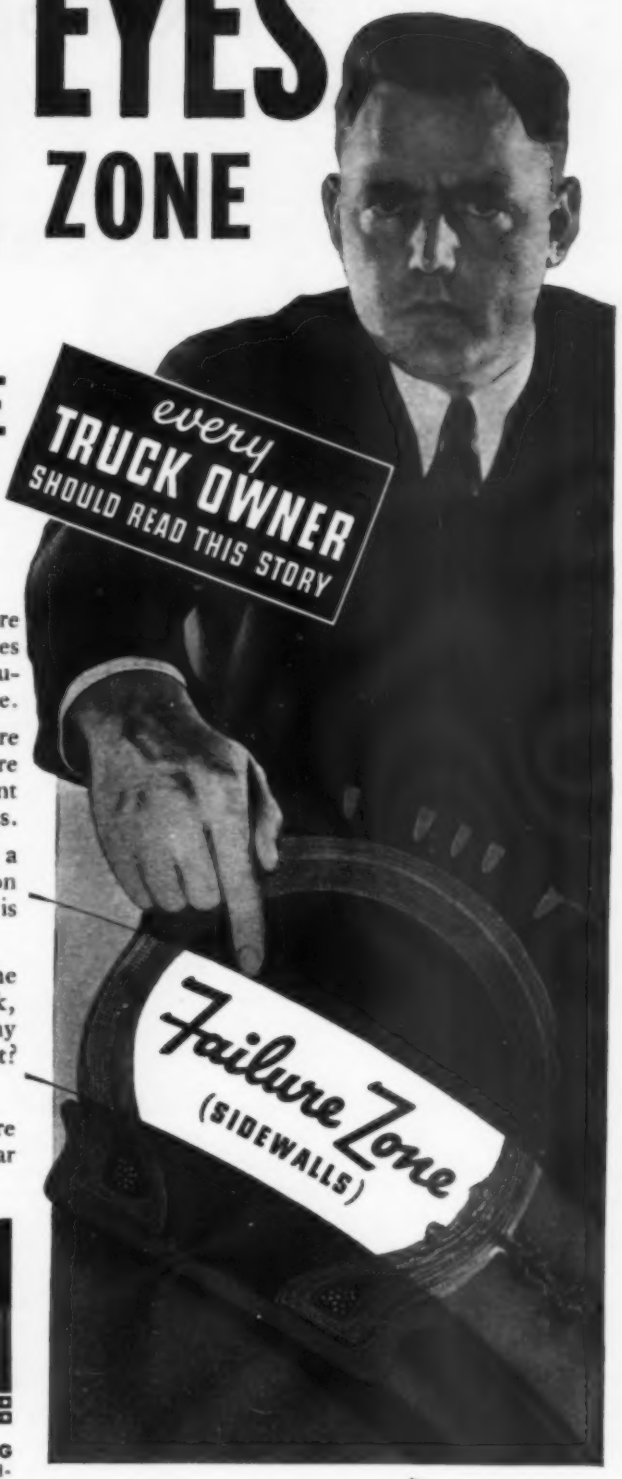
Average mileage developed, types of vehicles used, general service requirements, type of territory operated in, etc., are the basic factors to consider in establishing the most desirable interval for each fleet.

Once the interval has been decided upon, a date, period of the day and place of inspection should be established for each vehicle. The majority should be scheduled for night inspection, to obviate removal from normal service. The place of inspection should be set up at the most convenient point with reference to garage location, territory in which used and the loss of the least driving time and mileage to and from in-

(Please turn to page 57)

"OPEN YOUR EYES TO THIS FAILURE ZONE

IT COST ME $876 A YEAR UNTIL GOODRICH SHOWED ME *Triple Protection*"



"$876 a year lost on tires which could not stand the gaff at the 'Failure Zone.' Rim breaks, sidewall breaks and blow-outs took dozens of our tires out of service long before the tread was worn." It's an old story. Thousands of truck owners have told us of their losses—from the same cause.

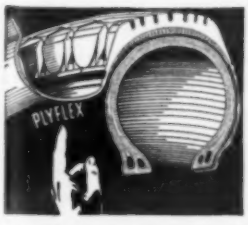
Even if you operate only one truck, the chances are that the "Failure Zone" may claim at least one of your tires within a year. A $30 tire thrown away after it is one-third worn means $20 wasted. You can prevent such unnecessary losses by using Goodrich Triple Protected Silvertowns.

Under load, a tire flexes several hundred times a minute. There is a terrific strain on every ply in the tire. Over-loading or under-inflation increases the strain many times. When the brakes are applied, there is an additional strain.

No wonder the short plies break away. No wonder the cords in the fabric break when they can rub against each other. No wonder a break, once started, spreads through the entire sidewall—ruins the tire. Why not make sure that your trucks have tires that wear out—not blow out?

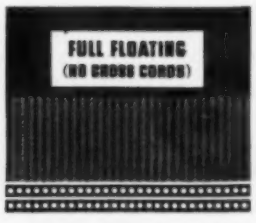
GET THIS PROTECTION FREE

Silvertowns cost no more than any standard truck tire. Yet they are triple protected. This means that you get the last dollar's worth of wear out of your tires. Here's how it works:



1 PLYFLEX—Plyflex is a *new* tough, sturdy rubber material. Every Silvertown truck tire has a layer of Plyflex protecting the sidewall. It bears the brunt of the strains caused by the tire flexing several hundred times a minute. It distributes the stresses throughout the carcass. It prevents local weakness.

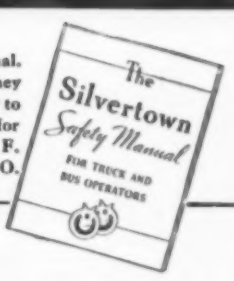
2 PLY-LOCK—The short trouble-causing plies in ordinary tires often tear loose just above the bead. A direct result of stresses concentrating at this one weak point. In Silvertowns, the plies are "locked" about the beads—anchored in place. The tapered ply ends are floated in rubber. This is PLY-LOCK.



3 FULL-FLOATING CORD—100% floated-in-rubber cord fabric is used in the new Silvertowns. Each cord is surrounded by rubber. With ordinary cross-woven fabric, when the cords touch each other they rub—get hot—break. In Silvertowns there are no cross cords. No friction. Fabric *wears longer.*

DON'T DELAY. *Get your tire costs down to rock bottom. See any Goodrich truck tire dealer. He won't ask you to buy a pig in a poke. He will make a free analysis of your truck loads and show you three convincing tests of Triple Protection.*

FREE! 48-page Safety manual. Tells how to cut accidents—save money—build good will for your fleet. How to get free Silvertown Safety Awards for your drivers. Write Dept. T-69, The B. F. Goodrich Rubber Company, Akron, O.



Goodrich *Triple Protected* Silvertowns

FOR TRUCKS AND BUSES

Say "I saw it in FLEET OWNER"—It Helps!

Special Truck Bodies as Display Rooms

"Sample Cases on Wheels" Reflect the Modern Method of Selling in Many Industries — Types of Bodies Used Vary

THE traveling truck display room is a good example of the diligent merchandising programs now being set into motion by alert manufacturers. Many of these units that are at present in operation are run in conjunction with company fleets of trucks and salesmen's cars. Both standard and custom bodies are used, but the "expanding" type of body seems to have found acceptance in many industries. Several jobs are illustrated herewith.

As an example of the use to which standard bodies can be put, the reader's attention is called to the small photograph at the head of this page. This is a traveling educational exhibit of tools and shop equipment that has been successfully used by a prominent small-tool manufacturer catering to the automotive trade. This exhibit is contained in a standard "sedan" type of commercial body, of which little need be said.

The photograph in the lower left-hand corner is the familiar "General Electric Kitchen." This is mounted on a special "Aerocoach" semi-trailer chassis, and is drawn around by a standard Reo coupe. A number of these jobs are in use by various General Electric distributors throughout the country, calling on housewives to demonstrate the various household electrical appliances manufactured by G. E., including electric refrigerators, vacuum cleaners, washing machines, ranges, clocks, irons, heaters, toasters,

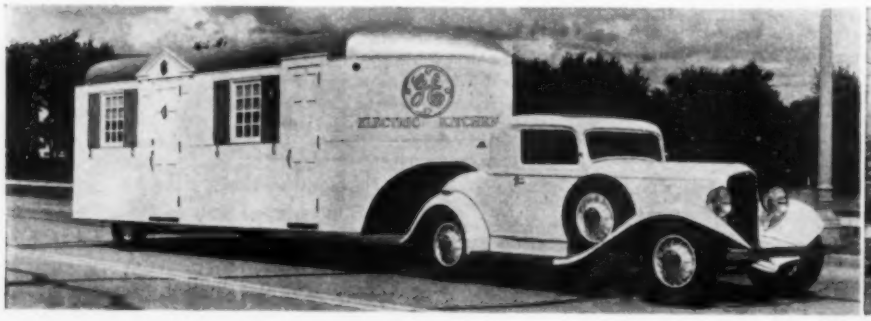
Westinghouse, similarly, transports and displays its electrical appliances "as easily as a shoe salesman shows his wares." This concern uses special truck bodies on Dodge chasses. This somewhat difficult problem required a special body to do the trick and the "Expando" was chosen. This is a comparatively recent development.

The body has the property of expanding its sides and top, so that it can accommodate not only a large number of appliances, but has extra room, when needed for display purposes, for a considerable number of people. When in transit, the top and sides, fit snugly down, so that the body is not larger than ordinary trucks.

Interior of the Westinghouse motorized sample case. Two electric ranges, two washers, ironer, two vacuum cleaners, refrigerator and a complete line of smaller appliances are carried.

For example, the first Westinghouse motorized sample case, with Expando body, contained the following: two electric ranges, two washers, ironer, two vacuum cleaners, a refrigerator, and a complete line of smaller home appliances. This is as much and sometimes more equipment than is usually seen in the smaller electric stores. Further the display has been so arranged that new and seasonable items will be included as such changes are made in the Westinghouse home appliance line.

According to the Westinghouse sales promotion division the primary purpose of the Expando truck is to carry a complete line of merchandise to all dealers. Secondary considerations include the possibility of holding sales clinics with dealer retail salesmen—especially the smaller dealers.



General Electric's Traveling Kitchen on special Aerocoach chassis is pulled by a standard Reo coupe. The Westinghouse job, utilizes an Expando body, mounted on a standard 1½-ton Dodge truck chassis.

Do You Know the PRICE of DIRT?

How do you pay for the dirt that enters your engine? The dirt itself is free . . . all too free . . . for it comes in with the air that enters your carbureter and is passed along with the gasoline mixture into the engine.

What does the dirt cost you after it gets in the engine? Untold expense. The most glaring cost is in carbon removal, for the dust and dirt sucked into the engine is the chief cause of hard carbon formations. Burned bearings and scored cylinders are caused in most cases because the engine has been operating with dirt laden air.

Does dirt affect oil mileage? You bet it does. That's the main reason why you have to change oil . . . it gets loaded down with dust, dirt and grit. And most of that contaminating material is taken directly into the engine with the gas mixture. Keep dirt out of your engine and you automatically keep it out of your oil.

Does dirt affect gasoline mileage? Yes it does. If the air is heavily laden with dust and dirt you do not get that proper carburetion and proper vaporization of the gasoline which is the basis of all engine performance.

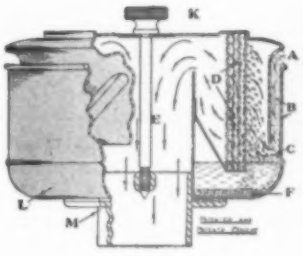
How much dirt do you get? You have no idea how much dirt, dust, grit and grime passes into your engine every day. For every single gallon of gasoline you use, 8,400 gallons of air go through your carbureter. And every ounce of that air carries dirt in suspension. If you doubt it, just look at your windshield. And remember that the same dust and dirt you collect on your windshield is going into your engine, to work havoc with its finely adjusted parts and minute clearances.

What does dirt do inside the engine? It combines with the oil and changes oil into a grinding compound. Since dirt is largely silicon it aids in carbon formation, especially the hard silicon carbon that is the hardest of all carbon to remove.

How can dirt be kept out of the engine? Just put on an Air-Maze. It's attached to the carbureter inlet in a jiffy. And it does the trick . . . completely. There's no air cleaner like an Air-Maze. The leading automotive engineers will confirm that statement. It causes the dirt to impinge on the mesh screening but it does not resist the free flow of the incoming air nor impede the engine performance in any way. Actual tests have repeatedly shown a higher horsepower output after the Air-Maze was attached.

Does it pay for itself? Many times over. You can count on a minimum saving of a cent a mile. Large truck operators have proven repeatedly that their Air-Maze equipped cars and trucks reduce operating and maintenance costs by a cent or more a mile. Let us give you *all* the *facts*. A letter will bring them . . write it *now!*

AIR-MAZE CORPORATION, *Caxton Building, Cleveland, Ohio*



OIL BATH TYPE

THE dust laden air enters on all sides of the unit in a large but relatively thin vane at A. An induced spiral and rolling motion forces a large part of the grit and dust to deposit on the oiled surfaces of inner and outer cases at B. Additional dust is washed out when the air comes in contact with the turbulent oil bath at C. The semi clean air is then thoroughly filtered while passing through the twelve layer AIR-MAZE patented filter element D which is kept washed clean and reoiled by the splash of the agitated oil bath. The clean air proceeds to the motor at E while the dust is washed downward into the sump at F.

AIR-MAZE

The Completely Protective Air Filter for All Automotive Equipment

Say "I saw it in FLEET OWNER"—It Helps!

By R. A. L. Hogan,
Vice President, The Greyhound Corporation

Do Fleet Operators Abuse *the* Highways?

"No" Says Bus Executive at Annual S. A. E. Meeting, and Substantiates His Assertion With This Outline of Operating Experience Facts

MORE than 33,000 persons are killed and one million persons are injured each year because of the abuses of the highway by operators of all kinds. A large proportion of the accidents now resulting in fatality and serious injury can be avoided; but, if accidents increase in the same proportion as they have during the past four years, the fatality toll will undoubtedly mount in a very short time to at least 50,000 lives annually.

There are a large number of causes for the mounting toll of accidents on the highway, but the worst causes of accidents, in the opinion of the writer based upon many years of interesting experience in accident prevention, are as follows:

1. Accidents at street and road intersections.
2. Accidents resulting from passing other vehicles going in the same direction and resulting in collisions with vehicles coming in the opposite direction.
3. Accidents resulting from vehicles running off of the highway because they have been crowded off by another vehicle coming in the opposite direction.
4. Accidents resulting from running into the rear of the car ahead going in the same direction.

Admitting that the human element, in the form of the driver, is responsible for most accidents, the condition of the vehicles themselves sometimes plays a very important part as well. Periodic inspections such as are made at the Greyhound shops, together with such preventive maintenance work as brake adjusting, lubricating, tightening and adjusting steering gear and springs, headlights, etc. will go a long way towards gaining the ultimate in highway safety.

While the writer does not intend to imply that the above are the only types of accidents which result in serious injury or fatality, they do nevertheless cover in a broad sense practically all such accidents.

Accidents resulting from collisions at intersections can be prevented in a large degree by (a) greater alertness on the part of the driver; (b) reduced speed if view is curtailed; (c) not taking safety for granted; (d) the driver taking full responsibility for the protection of his life and his vehicle from another person's reckless driving.

Accidents resulting from passing other vehicles going in the same direction and resulting in collisions with vehicles coming in the opposite direction can be prevented in a large degree if the driver of the vehicle about to overtake the one ahead will remember that the safe place is on the right hand side of the center line of the roadway, in which position he should stay until he is certain he can pass with safety.

Accidents resulting from vehicles running off of the highway because they have been crowded off by another vehicle coming in the opposite direction can be prevented only when drivers are properly educated in the courteous use of the highway; by that I mean when the driver believes sufficiently in safety to protect the rights of others.

Accidents resulting from running into the rear of the car ahead going in the same direction can be prevented to a large degree if the driver will keep far enough behind the car ahead to keep safe braking distance.

Greyhound Lines has had many years of experience with this great problem of highway safety, and we believe that the causes of most of the difficulties are well enough known, so that effective cures are possible in a large percentage of cases. We believe there is a pressing need for drivers'. license laws in all of the United States. Most of the unqualified drivers now using the highway are those who are driving their own vehicles. I make this statement, not to discredit the careful and safe private driver, but to point out that the real cause of accidents in the United States today is the result of unsafe practices on the part of individual drivers who while they are driving unsafely think they are perfectly competent to drive safely. A drivers' license law, if properly administered, will eliminate much of the difficulty that we are talking about.

Motor buses and trucks are safer than private automobiles. The chief reason for this is that the owners of fleets have given greater consideration to the education and discipline of drivers and to the establishment of safety rules for the guidance of the drivers. These owners have thus created in the minds of the men a definite interest in safety. Control of vehicles in hazardous places has been given real consideration. Railroad tracks, curves and slippery roads have been acknowledged by these owners and fleet drivers as being dangerous places; and, since the realization of this danger has been definitely embedded in the minds of the drivers, a greater respect for safety

(*Please turn to page* 58)

REO CREATES NEW VALUE
FOR YOUR TRUCK DOLLAR

BUYERS need only glance at the specifications to see that the 1½-2½ ton Reo Speedwagon at $595 represents something entirely new in truck values. A Reo of this size at this figure is wholly without precedent.

It creates a new value for your truck dollar—establishes a buying opportunity that not even Reo has offered before.

This truck has more than mere price appeal. It is actually a TRUCK in every sense of the word—not an assembly of passenger car parts. The exceptional power and long life of the Reo-built Gold Crown Engine insure a range and regularity of service that has heretofore called for an investment of hundreds of dollars more.

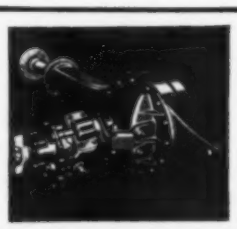
In fact, the entire 15 superiorities with which Reo now challenges the field for low cost truck performance are distinct and *provable* superiorities. Others may equal Reo in a few of the points—but none can match all. Prove this to your own satisfaction by examining the Reo "Book of Superiorities".

Reo Speedwagons and Trucks range from ¾ to 4-6 tons. New low prices—$530 and up. 32 wheelbases, all with Reo Gold Crown Engines. Tractor-Trailer units with correct load distribution and maximum pay load capacity. All prices chassis f. o. b. Lansing, plus tax.

THE QUALITY TRUCK IN THE LOW PRICE FIELD

Use This Book In Choosing Your Next Truck!

This book will serve you as an excellent guide in the correct selection of your next truck. In addition to the 15 superiorities with which Reo challenges the field for low cost truck performance, it supplies accurate and invaluable data with which you may compare all trucks in the low price range. Why buy a truck without first looking into the facts and making sure of getting the most value for your money? Write Reo today for the "Truck Superiority Book." No cost, no obligation.



The Reo built gasoline-saving two-speed rear axle unit gives you the equivalent of two motor sizes. Greater flexibility and economy for all types of work. Available at only slight extra cost.

The Reo Truck Performance Gauge gives the exact answer as to the truck best suited for your job. Before buying a truck, ask a Reo salesman to use this Gauge to determine your requirements.

$595
1½-2½ TON CHASSIS
F. O. B. LANSING PLUS TAX
DUAL WHEELS EXTRA

REO MOTOR CAR COMPANY
LANSING MICHIGAN

Say "I saw it in FLEET OWNER"—It Helps!

The "Low-Down" on Graphited Lubricants

By Raymond Szymanowitz, B. S.

The Uses of Colloidal Graphite in Auxiliary Automotive Lubricants; How It Differs from Graphite as the Layman Knows It

IN view of the rapidly growing popularity of colloidal-graphited lubricants in the automotive field, a few remarks concerning colloidal graphite and the manner in which it is now made available to fleet operators, should be found of universal interest. Particularly so, since the Editor of this publication reports having received a virtual avalanche of letters from fleet operators in which many questions are asked regarding the various graphited lubricants now on the market. In the following paragraphs, readers will find many of their questions answered.

Before dealing with the subject of colloids, however, or outlining the manner in which graphite in the colloidal state gives added protection to bearings, cylinder walls, gears and springs, it may be well to go back a step to discuss, briefly, the properties of graphite in its most common form.

Ordinary (or natural) graphite is a dark gray, flaky substance, greasy to the touch. Although employed in industry for a wide variety of purposes, our prime interest in this substance lies in the fact that it has long enjoyed utility as a lubricant in the automotive industry.

Being a solid, heavy pressures cannot squeeze it from the surfaces it is employed to protect, and being resistant to oxidation, it is not readily destroyed by high temperatures. In the flake form it has an enviable record as a lubricant in rough, heavy-duty machines.

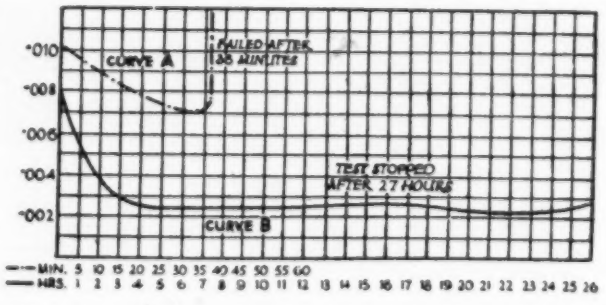
Natural graphite, unfortunately, is limited in its use by two handicaps. In the first place it sometimes carries as an impurity, traces of the minerals with which it is associated in the earth. Many of these substances are likely to be abrasive in character and cannot be very easily separated because they have approximately the same specific gravity as the graphite itself. Graphite contaminated with grit, it is obvious, is just as injurious to fine mechanisms as lubricating oil which carries abrasive impurities.

The second disadvantage of ordinary graphite is that it cannot be suspended in oil for any appreciable length of time. Even when pulverized to a point where its particles pass through a 300-mesh screen with ease, it is still too coarse for use with oil in the lubricating systems of present-day automotive engines. Despite the above remarks, it should be thoroughly understood that natural graphite has a vast number of successful applications outside the field of automotive engine lubricaton.

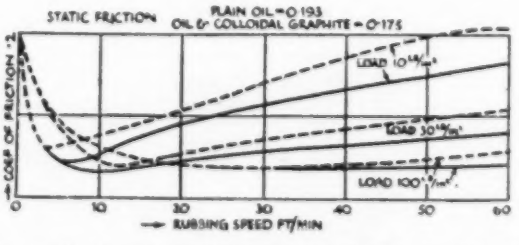
The development of *colloidal* graphite is due to the efforts of Edward G. Acheson. Knowing that solids, when repeatedly subdivided, eventually reach a point where they remain suspended in liquid carriers despite their relative weights, Acheson proceeded to develop a means whereby he could bring lubricating graphite into this condition. He devised a method whereby he could break up *each* particle of 300-mesh graphite into hundreds of smaller particles. When a substance is broken up to such a degree, it is known scientifically as a "colloid". Graphite in this condition, therefore, is termed "colloidal graphite".

Substances in the colloidal state, however, are not as finely divided as substances in true solution. In other words, the particles of graphite which have undergone colloidalization are not so small as the particles of sugar dissolved in tea; but they approach the condition of the latter in more respects than one and are, for that reason, frequently spoken of as colloidal "solutions." It should be clearly understood that colloids are really *suspensions* even though they appear to the observer to be true solutions.

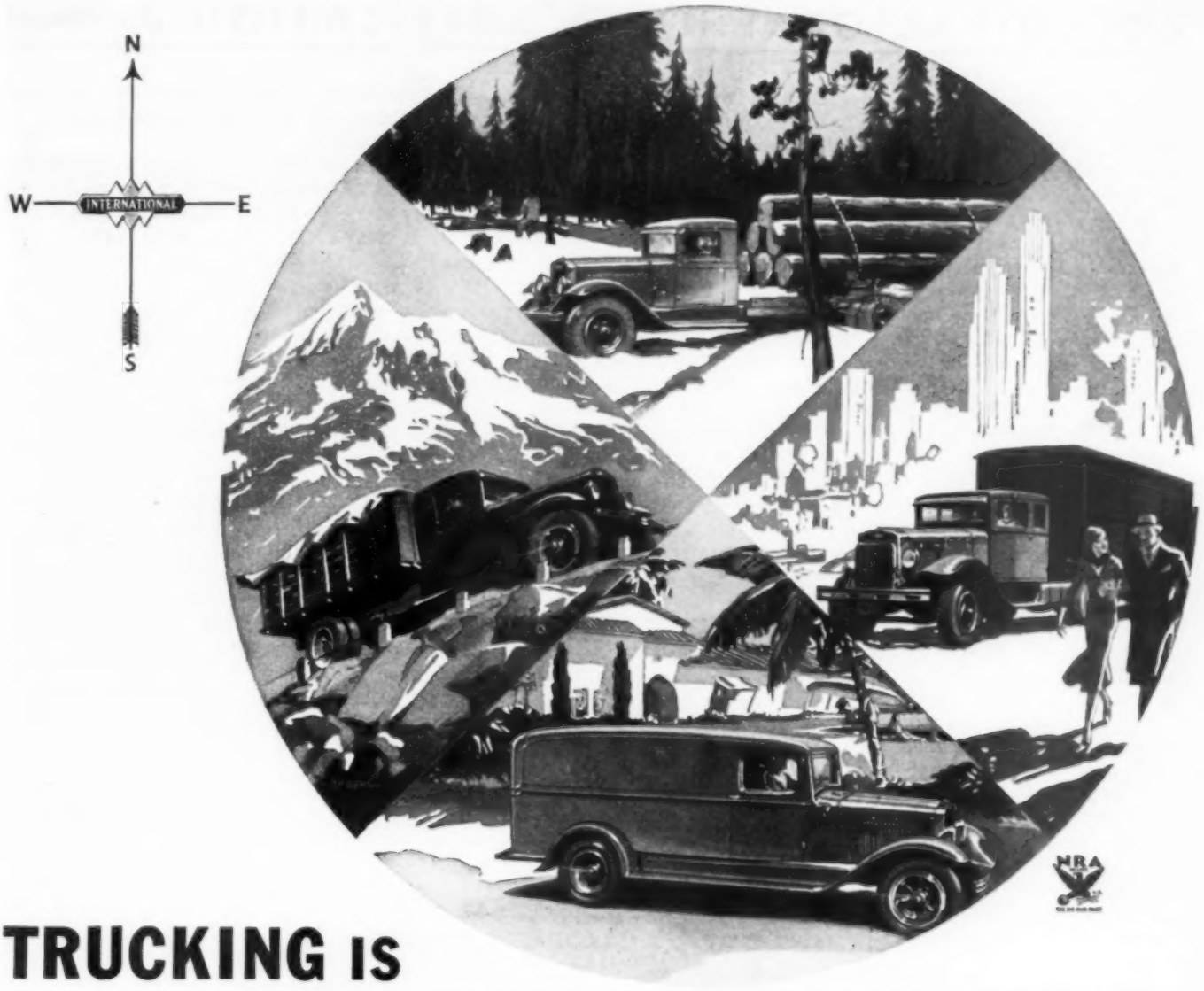
Substances in the colloidal state do not depend upon the viscosity of their carrier for suspension. Their ability to act independent of the force of gravity is due to the fact that each particle acquires an electrical charge of the same sign during the colloidalizing process. Since bodies which are charged alike elec-



In a special test an ungraphited bearing seized in 36 mins. (curve A), but when lubricated with colloidal graphite it ran freely for 27 hours (curve B), after which the test was discontinued.



This graph shows how the use of colloidal graphite (full lines) materially reduces the coefficient of friction. The dotted lines refer to plain oil.



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EVERY town and city in the United States has responsible firms engaged in the business of Trucking and Hauling. With their fleets and drivers available for any kind of hauling—by the job, the day, week, month or year—they perform a vital public service.

What these men think about International Trucks and Service should interest all buyers and operators of motor trucks, for trucking contractors are seeking one end—*the lowest cost per ton-mile.* Hauling is all they have to sell—and their profits go up only as their costs go down.

Without the confidence of this great trucking industry International Harvester could not have become an outstanding truck manufacturer. Go where you please—in small or large cities—and you will find Internationals hauling their large share of the Trucking Industry's own loads.

Close figuring men who make a business of trucking know trucks as the stove man knows stoves—as the shoe man knows shoes. All makes of trucks are known to them in terms of black or red ink. They can go back in their books for many years and show you which makes of trucks pay an operating profit—and which trucks do not. That is why they standardize so largely on Internationals. They don't guess. *They know!*

International's after-sale service is a most important consideration to the trucking industry. Standard International parts and standard International Service in 201 cities—the largest company-owned truck service organization in the world—play a vital part in the brilliant performance of International Trucks—in any business.

Whatever your business may be, do not buy any truck *of any size or for any purpose* until you know all that International offers you. Visit the International Branch or Dealer near you. Ask for demonstration. Sizes range from ½-ton to 7½-ton. Chassis prices from $360 up, f.o.b. factory.

INTERNATIONAL HARVESTER COMPANY
606 S. Michigan Ave. OF AMERICA (INCORPORATED) Chicago, Illinois

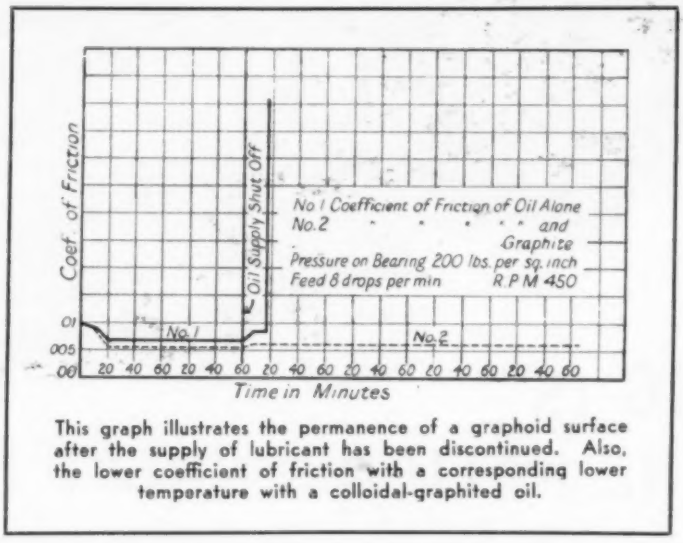
INTERNATIONAL TRUCKS

COLLOIDAL GRAPHITE *in* LUBRICATION *(Continued)*

trically repel each other (those charged unlike, being drawn together) one can readily see how this constant repulsion keeps the particles in a state of agitation. One must bear in mind that repulsion takes place in three dimensions and that a particle may be repelled upward just as well as in any other direction. It is evident, therefore, that so long as the particles retain their charge, they are not affected by gravity.

Their passage through filter paper is a further example of the fineness of colloidal particles. Also, when oils containing colloidal graphite are used in wick feeds, the graphite particles pass up the capillaries of the wick unhampered, just as if they were in true solution. These few preliminary remarks put one in a better position to understand the nature of colloidal-graphited lubricants.

The efficiency of this type of lubricant is based on its ability to form on friction parts—either by adsorption or under pressure—breath-like films of graphite. These immeasurably thin films are usually spoken of as "graphoid surfaces." A graphoid surface has the peculiar property of being better "wetted" by oil than is the case with metal. In other words, if a drop of oil is placed on a graphoid surface, it will be spread much more rapidly than would a similar drop of oil placed on a metallic surface. The layman says the graphite wets better; the technical man looks upon the graphite as "having a lower interfacial tension" with oil.


Coef. of Friction
Oil Supply Shut Off
No.1 Coefficient of Friction of Oil Alone
No.2 " " " " and
Graphite
Pressure on Bearing 200 lbs. per sq. inch
Feed 8 drops per min R.P.M. 450
No.1
No.2
.01
.005
.00
20 40 60 20 40 60 20 40 60 20 40 60 20 40 60 20 40 60
Time in Minutes

This graph illustrates the permanence of a graphoid surface after the supply of lubricant has been discontinued. Also, the lower coefficient of friction with a corresponding lower temperature with a colloidal-graphited oil.

The reader can perform for his satisfaction, a little "wetting" experiment in his own garage. Wet down the hood of an automobile with a hose. The lacquer finish will glisten brightly while wet. Pass a damp chamois cloth over a portion of the hood and note how well the finish is dried. Now wet the car down a second time and in one spot rub a little soap. Again pass the chamois over the finish and note how the soaped area remains wet. The latter portion has been "wetted" more effectively—it possess a "lower interfacial tension" with water than is the case where the soap was not applied. Anyone performing this experiment will be convinced of the truth of the statement that "a surface that is better wetted is a surface that is more difficult to wipe dry."

Graphoid surfaces, therefore, because of the ease with which they are wetted and the difficulty with which they are wiped clean, efficiently retard oil-film rupture. In no place is the employment of this property more important than on the friction surfaces of our present-day mechanical devices—devices which in many instances are required to operate uninterruptedly for long periods.

Graphoid surfaces, possessing the low friction properties of the graphite from which they are formed, are capable of serving as efficient dry lubricants in the complete absence of oil. This is an especially important advantage as it permits a machine to run for surprisingly long intervals during breaks in the lubricant supply without the attendant dangers of metal-to-metal contact.

Another valuable property of graphite is its chemical inertness. Only in an atmosphere of pure oxygen does graphite burn readily and then, only at a temperature above 660°C. It is interesting to note that the ignition point of graphite varies directly as the temperature at which it was produced. Electric furnace graphite, manufactured at a temperature of 5000°F., is far more resistant to oxidizing influence than the natural product which geologists have found is formed at considerably lower temperatures over longer periods of time. It is evident, therefore, that electric furnace graphite is the ideal lubricant for high temperature work especially when it is free of abrasives and in the colloidal state.

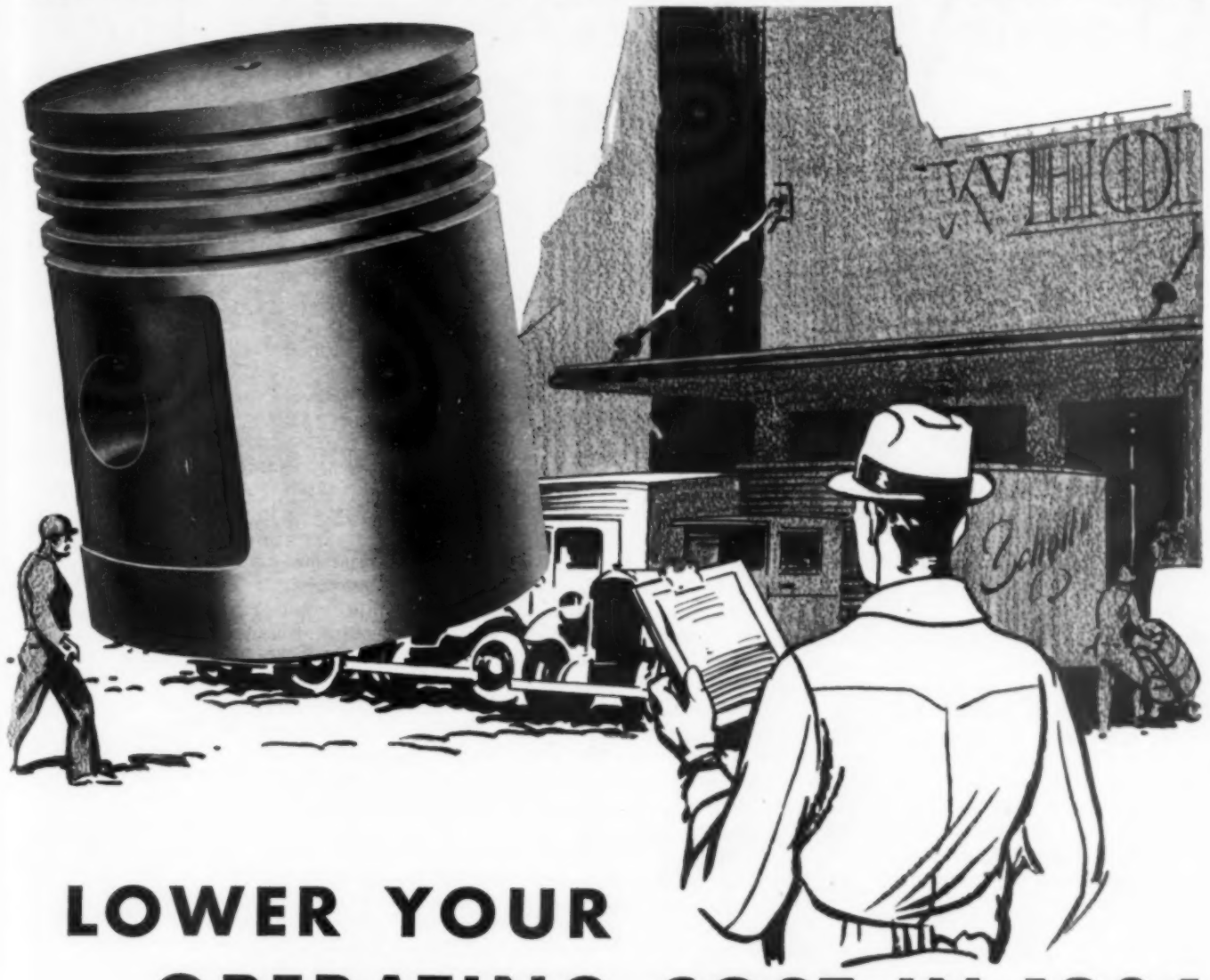
A type of lubricant in which colloidal graphite enjoys a prominent role is that for the upper portion of automobile cylinders. These are spoken of as either top oils or upper cylinder lubricants. The lubrication of upper cylinders may be accomplished by two methods. One scheme is to feed the lubricant into the upper cylinder by injecting the same into the intake manifold with the aid of an external lubricator. Another popular practice is to add the lubricant directly to the fuel. This latter procedure is quite in line with the old practice of adding a quart of oil to every 5 or 10 gallons of gasoline used during the "breaking in" period of a new car.

Up until recently, we have taken care to lubricate every part of the automobile where one metallic surface rubs against another—except in the combustion zone of the cylinders. We found the chassis of the modern car equipped with half a hundred grease fittings designed to carry lubricant to every conceivable part. We sprayed the springs, oiled the hinges, even soaped the hood tape—yet neglected the combustion chamber. The only plausible explanation for this inconsistency being possibly the fear of excessive carbonization. This factor is no longer a serious one if the lubricant is of the proper character and intelligently employed. Modern refining methods have made suitable oils for this purpose quite a common article.

Let us picture what takes place in that portion of the cylinders above the piston head at the time of firing. Here we have an exceedingly hot flame forcing the piston downward at a terrific rate. The cylinder walls, though water jacketed, are momentarily brought to a temperature greater than any petroleum product can withstand. With the turn of the crankshaft the piston flies up again to rub against this oil-free surface. It is true that it makes a feeble attempt to drag oil with it as it ascends but little of this reaches the upper portion of the chamber and that which does find its

(Please turn to page 59)

TRUCKS · BUSES · PASSENGER CARS · RACING CARS



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● For more profitable operation of your fleet in 1934, install Ray Day Pistons *now*. Careful records kept by many leading fleet owners show that Ray Day Pistons give long, trouble-free service, and definitely reduce operating and upkeep costs. Ray Day's patented, exclusive design results in performance that you can get from no other piston. For only in Ray Days is the possibility of skirt distortion entirely eliminated—and skirt distortion is the cause of practically all piston troubles. And Ray Days are made of the toughest light alloy ever used in pistons. Yet with all their many advantages, Ray Days cost no more than ordinary pistons. Ray Day Piston Corporation of Detroit.

RAY DAY METAL

is an aluminum alloy light in weight with high heat conductivity. Tensile strength 50,000 to 55,000 lbs. per sq. inch. Brinell hardness of 140 to 160. All the weight advantage of light alloy with the wearing qualities of cast iron.

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RAY DAY PISTONS

RAY DAY PISTONS ARE STANDARD EQUIPMENT ON MANY OF THE FINEST CARS, BUSES AND TRUCKS

Say "I saw it in FLEET OWNER"—It Helps!

Choosing Tire Sizes for 1½-Ton Trucks

This picture illustrates three popular tire combinations for rear wheels on 1½ ton trucks. The cost of changing to any one of these combinations is surprisingly low. For additional information, refer to the Changeover Guide shown on the following page.

FOR certain classes of work the one and one-half ton truck has always been very popular. With the coming of adverse legislation in many states, trucks in this classification have been stepped up in performance and their field of service broadened until at the present time in the United States there are more trucks in the one and one-half ton classification in operation than all others combined.

These trucks are operated in fleets of from one to several hundred, and the buying habits of the operators are such that it is often necessary for the truck dealer to carry a number of these trucks in stock for immediate delivery. This, together with the fact that since most of the trucks in this classification are made on a volume production basis, a large degree of standardization is necessary in their manufacture.

When the trucks are actually put into service, however, they may be used for hauling anything from light packages in merchandise delivery service to long distance heavy freight hauling. When it comes to the tire equipment, the size and type of tire which might be adequate or desirable for one type of service would be entirely unsuited for another. In the majority of cases the decision as to the size and type of tire to be used lies largely in the hands of the truck dealer and the user.

As the classification indicates, these trucks are designed and intended to carry one and one-half tons of pay load. Under actual operating conditions, however, they are often called upon to carry much more than this amount. Since the tires must withstand all of the hazards of unusual operating conditions when the truck is called upon to carry a greater load than that for which it is designed, as well as to withstand other unusual operating conditions, the tires are often the first part of the truck to fail as a result of these conditions.

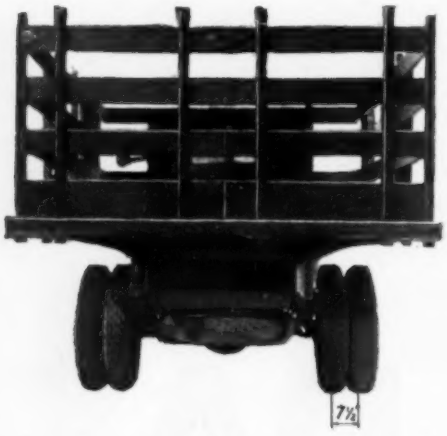
Many operators of one and one-half ton trucks have the erroneous opinion that it is good economy to purchase the truck on standard equipment so far as tires are concerned, and then if trouble develops to change over to whatever size is required to carry the load.

For example, a certain operator purchased a truck equipped with 6.00-20 tires on front wheels and 6.00-20 dual tires on the rear wheels. The load which he was carrying was greater than the rated capacity of the truck and the tires were overloaded to the extent that after 17,500 miles, he had used five tires in addition to the original set and all of the tires on the truck at that time were worn out. Three of the original tires had been adjusted at $5.00 each or a total expenditure of $15.00. Two other tires had been purchased at $15.70 each or a total of $31.40. Five tubes were required for these tires at a total cost of $16.50. Thus the total expenditure for tires over and above the original set in the first 17,500 miles amounted to $62.90.

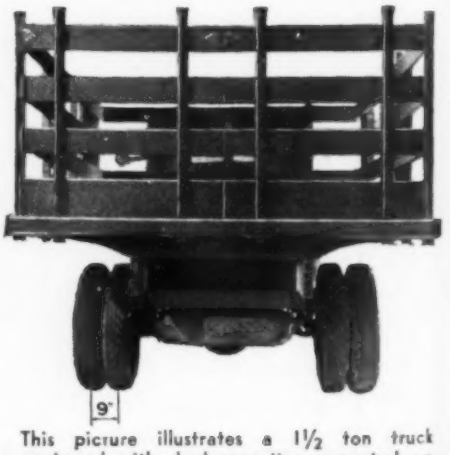
Analysis of the operating conditions revealed the fact that 32 x 6 truck type pneumatic tires would have been adequate to carry the load, and could have been purchased as original equipment at an additional cost of $25.00. If these tires had been purchased with the truck, the saving over the first 17,500 miles would have been $37.90.

Another interesting fact was brought out in that the eleven tires required for 17,500 truck miles delivered an average of 9,545 tire miles each. Because of the overloaded condition of the tires, it was discovered that they had delivered only approximately 52% of the service to have been expected from a tire of adequate capacity.

It is obviously poor economy to replace tires on a one and one-half ton truck which have failed as the



This illustration shows a 1½ ton truck equipped with dual rear tires having 7½" center-to-center dual spacing. The following tire sizes can be used on this wheel and rim combination: 30 x 5 T.T., 32 x 6 T.T., 30 x 5 H.D., and 6.00-20. Refer to Changeover Guide for average payloads which may be carried on these tire combinations. Wherever possible, front and rear tires should be the same sizes to provide better changeability.



This picrure illustrates a 1½ ton truck equipped with dual rear tires mounted on 6" rims and 9" center-to-center dual spacing. The following tire combinations may be applied to these rims: 32 x 6 H.D., 34 x 7 T.T., and 6.50-20. Wherever possible, front and rear tires should be of the same size to provide for satisfactory interchangeability. Front tires should never be larger than rear tires. Refer to Changeover Guide for payloads which may be safely carried on these tire combinations.

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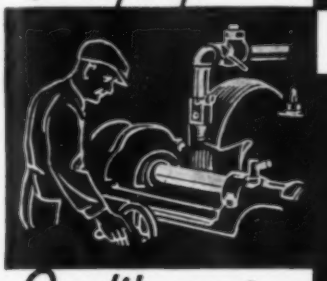
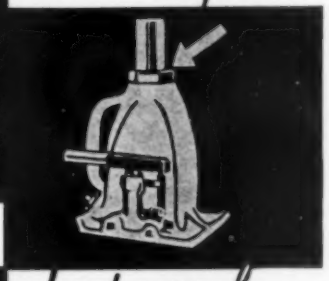
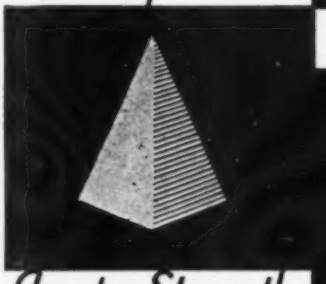
More Compact



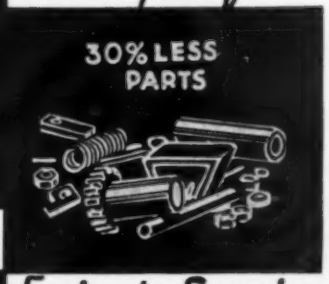
Quality made



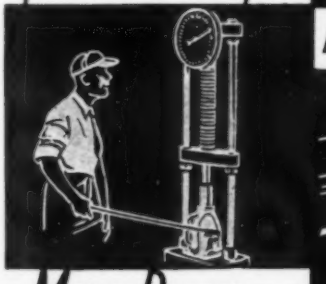
Leak proof



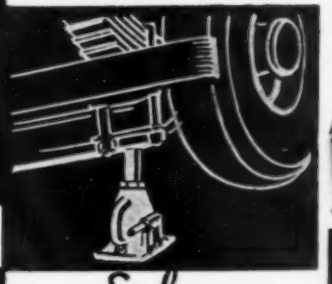
Greater Strength



Easier to Service



More Power

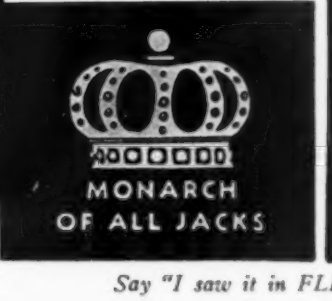


Safer

Greater Lift

More Economical

Easier to Operate



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Say "I saw it in FLEET OWNER"—It Helps!

HOW TO SELECT *the* RIGHT TIRES (*Continued*)

result of overload and other abusive conditions with new tires of the same size and type when a simple check brings out the fact that the present tires are overloaded. A great many operators would be glad to change over to the proper size and type of tire if this could be readily determined. As a guide for choosing the proper tire and rim combination, The B. F. Goodrich Rubber Company has developed a table which immediately shows the proper size of tire to be used in carrying a given pay load. (See table on this page.)

The more popular one and one-half ton trucks are made in two wheel base lengths. The figures given for both the 131 in. and 157 in. wheel base trucks represent average figures. There are various body types available for these trucks which carry different weights and thus allow for varying pay loads. For the purpose of this table only average figures have been used. In using the table, if an extremely heavy body is used, the pay load as shown should be reduced somewhat. On the other hand, if a very light body is found, the allowable pay load can be increased somewhat.

It is impossible to compute all of the losses which result from tire abuse, but it is known that approximately 85% of all tires presented to the manufacturer for adjustment fail as a result of either overload or underinflation.

It is a known fact that tires which are habitually overloaded do not deliver as high mileage as those carrying their rated load, and it is further known that the amount of service to be expected from a tire that is overloaded decreases at a much more rapid rate than the increase in load.

For example, a tire carrying its normal rated capacity load can be expected to deliver 100% service. Another tire under the same operating conditions, but carrying a 20% overload may only be expected to deliver on the average 70% of normal service. The relation between the load carried and the amount of service to be expected is graphically illustrated in the load and service diagram appearing on page 20 of our December 1933 issue.

Changeover Guide for 1½-Ton Trucks

Payload Pounds	Tire Size*		Rim Size	Dual Spacing Inches
131-Inch Wheel Base				
1200	6.50-20	S	20 x 5	...
1700	7.00-20	S	20 x 6	...
	20x5 Standard rims are sometimes used but not recommended.			
1800	32 x 6 TT	S	20 x 5	...
2300	32 x 6	S	20 x 6	...
2500	8.25-18	S	18 x 7	...
3000	32 x 7	S	18 x 7	...
3400	6.00-20	D	20 x 5 D	7½
3700	9.00-18	S	18 x 7	...
4200	30 x 5 TT	D	20 x 5 D	7½
4500	6.50-20	D	20 x 5 D†	7¾
4900	30 x 5	D	20 x 5 D	7½
5500	7.00-20	D	20 x 6 D‡x	9
5700	32 x 6 TT	D	20 x 5 D	7½
6700	32 x 6	D	20 x 6 D‡x	9
7900	34 x 7 TT	D	20 x 6 D‡x	9
157-Inch Wheel Base				
1100	32 x 6 TT	S	20 x 5	...
1600	32 x 6	S	20 x 6	...
1800	8.25-18	S	18 x 7	...
2300	32 x 7	S	18 x 7	...
2800	6.00-20	D	20 x 5 D	7½
3000	9.00-18	S	18 x 7	...
3500	30 x 5 TT	D	20 x 5 D	7½
3800	6.50-20	D	20 x 5 D†	7¾
4000	30 x 5	D	20 x 5 D	7½
4800	7.00-20	D	20 x 6 D‡	9
5000	32 x 6 TT	D	20 x 5 D	7½
6000	32 x 6	D	20 x 6 D‡x	9
7200	34 x 7 TT	D	20 x 6 D‡x	9

* S — Singles
D — Duals

† Use Budd #23597-S, Ford, Dodge; Motor Wheel #07467 Ford, Dodge; #07234 Chevrolet. Or 3¾" dish wheel with spacer.

‡ Use Budd #31378, Ford; #31379, Chevrolet; #31378, Dodge.

x This combination is not supplied as optional equipment by some manufacturers.

The statement is often made if the manufacturers of one and one-half ton trucks would apply the proper size tire as original equipment, a great deal of unnecessary tire trouble would be avoided. This statement is not strictly true, however, owing to the fact that most manufacturers of trucks in this classification offer a wide range of tire sizes and combinations as optional equipment. The wide assortment of tire options allows for practically any load which might normally be expected to be safely carried on a one and one-half ton truck.

The tire dealer can best assist the operator by showing him, wherever possible, the losses in tire performance to be expected from habitual overloading. A slight increase in the initial cost of the truck as a result of the specification of the proper size and type of tire brings surprisingly big returns in the increase in tire mileage and resultant lowering of the cost per miles of operation.

Even after the truck is in operation, the cost of a changeover to the proper tire equipment is surprisingly low. For example, in the changeover guide shown, a great many of the tire combinations can be installed without the necessity for securing new rims and wheels. It sometimes happens that the greatest obstacle from the operator's point of view is the cost of new wheels necessary to make the change over to the proper size of tire. At the present time it is possible to change from 5 in. to 6 in. rims on one and one-half ton trucks for approximately $30.00 per truck. This includes the cost of the necessary wheels and rims. The extra charge for the larger tire size being in addition.

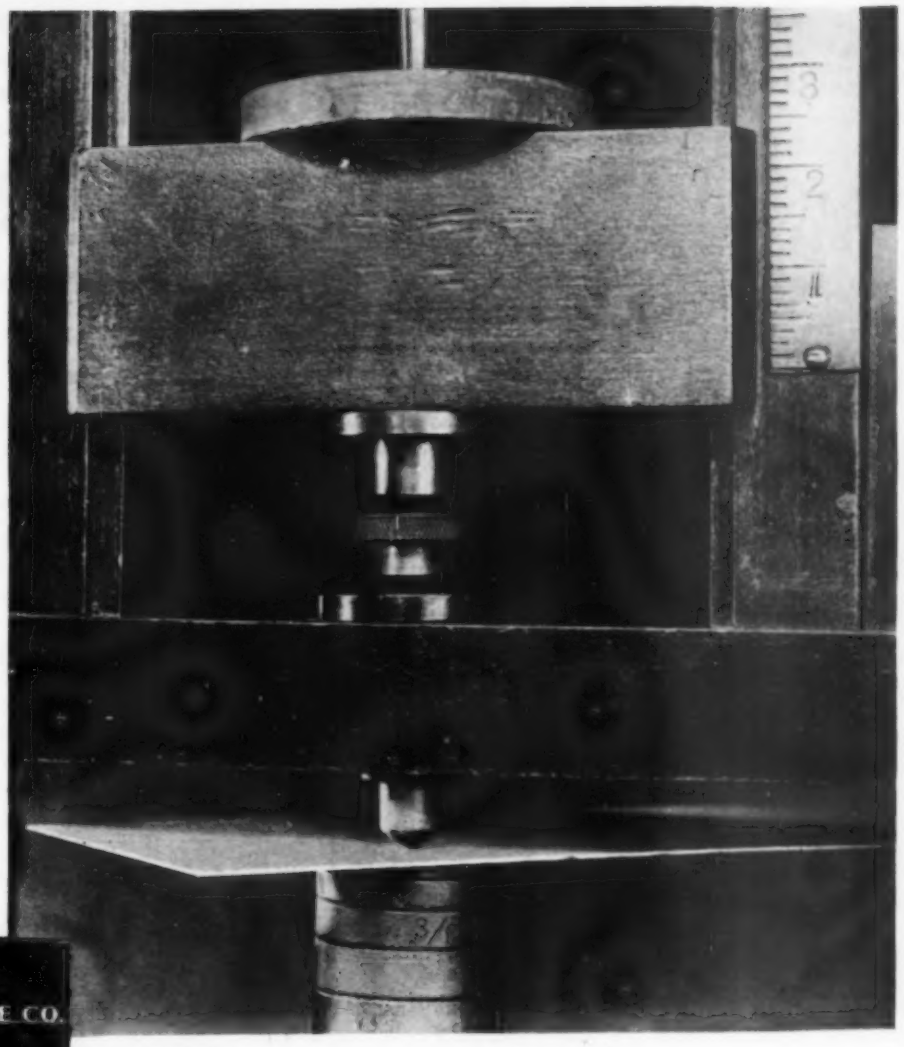
As a general rule the proper size of tire reduces the tire cost per mile of operation to a point where it is no longer a source of concern to the ordinary operator.

Considering the present low cost of tires, it is impossible to overlook the savings which may be effected from the use of the proper size of tire on one and one-half ton trucks.

(Editor's Note: Extra copies of this article may be obtained from us, free of cost on request.)

BANG!

ANOTHER FINISH ON THE SPOT



IN TRUCKS, *as in shoes, appearance is important. Florsheim keeps its delivery fleet smart and its finishing costs low with Du Pont Automotive DULUX.*

● When you cover a metal surface with paint or lacquer, the protective quality of the finish depends on the adhesion of the film and its flexibility. One way of determining both flexibility and adhesion is to apply the finish—and then wait to see what happens.

But du Pont chemists yearn to know before the paint is used. So they put the film "on the spot" in the laboratory ...pre-test it with the instrument shown above. This important instrument is called an Impact Machine.

The finish to be tested is applied to a piece of 20-gauge steel which is placed between an anvil and a movable steel ball. A movable weight is placed on the cross-arm, which is dropped on the ball, causing it to dent the panel. Flexibility and adhesion are measured by determining the relation between the weight dropped, the height of the fall and the amount of damage done to the finish by the impact of the ball on the plate.

This Impact Machine for testing hardness is one of the instruments in the du Pont System of Pre-Testing—one of the many tools with which du Pont chemists work to make possible a smarter, more durable and more economical finish for your trucks — Automotive "DULUX."

The Florsheim Shoe Company is one of the rapidly growing list of fleet owners who have discovered in "DULUX" a better way to keep trucks looking spick and span.

They find it resists scratching, exposure, the harmful effect of gasoline, oil and traffic film to a remarkable degree — can be polished more without wearing through. And "DULUX" wears longer. Trucks don't need to be touched up or refinished so often.

Automotive "DULUX" can be easily applied with spray or brush in your own refinishing shop or by an Authorized du Pont Refinisher. If you like, we will gladly help you work out standard "DULUX" specifications for your fleet. For further information, address E. I. du Pont de Nemours & Co., Inc., Dept. F–3 Finishes Division, Wilmington, Del.

DU PONT REG. U. S. PAT. OFF.

DULUX — AUTOMOTIVE — REG. U. S. PAT. OFF.

DU PONT MAKES A COMPLETE LINE OF AUTOMOTIVE REFINISHING MATERIALS

Say "I saw it in FLEET OWNER"—It Helps!

TROUBLE SHOOTER

(You Ask 'Em — We Answer 'Em)

A department, devoted to correspondence from readers of FLEET OWNER. Any questions having to do with automotive service will be answered in this department. All properly signed inquiries will be replied to by mail and such of them as are believed to be of possible interest to other readers will be published in these columns.

A "Flat" Ball?—Not Quite

To the Editor: Replying to your department "You May Not Believe It" which appeared in the October 1933 issue of FLEET OWNER, *I am wondering what the chief engineer of the ball bearing company mentioned, would say was the matter with the ball, taken from a ball bearing, which I am sending to you. I do not believe that by the greatest stretch of imagination, anyone can say that clean gasoline or kerosene would remove the flat spots from this ball.—T. N. H., San Diego, Calif.*

Our Reply: Received the ball which you sent; let us put you right. This particular ball is *worn* flat from being dragged around the races without rotating, probably because of grit and the lack of lubrication.

When the engineer mentioned above referred to a "flat ball" he did *not* mean a ball with a flat spot on it caused by wear, friction or abrasion. What he meant was a ball that had become flattened due to great loads, so that it would measure *more* than its original diameter in some sections, and *less* in others, such as would happen if you placed a ball on an anvil and hammered it flat.

Grit between the races and retainers of any ball bearing will prevent the balls from rotating and will produce such a ball as you have sent us. However, if you clean out the grit from a ball bearing assembly, and even if the balls are in this condition, the bearing will rotate when lubricated, but it will be rough and noisy and will not provide proper alignment for the shaft or journal.

If you (or any of our readers) have a ball that has been *increased* in diameter in any section, under *normal* load conditions, or even *abnormal* conditions, we would like to see it; and so would the engineer mentioned.

You May Not Believe It!

(But It's True)

THE FACT:

A 30 x 5 truck tire, mounted on a Chevrolet truck, delivered 132,202 miles during the period from October 15, 1930 to June 3, 1933.

PROOF:

THIS tire was operated by Gordon Stewart, Scottsbluff, Nebraska, and is now on display at the local Chevrolet dealer in that town. There also reposes there a sworn affidavit, proving claim to the mileage. (Editor's Note: We won't mention the make of the tire here; that would be telling, but if you are interested you can correspond with the principals.—H.C.F.)

Who Can Help Us on This One?

Question: I have been told about a party that installed a downdraft carburetor on a 1928 model Essex. This carburetor was obtained from a late model Chevrolet.

I would like to get some information as to how this would work out and would you advise such a change? Also, what changes would be necessary for installation? How would it affect fuel consumption and motor performance? Would like to get as much information as possible on this matter. Perhaps some of your readers may have some ideas on this subject.—C. K., Sheboygan, Wis.

Answer: We believe that you will have a more satisfactory job if you install one of the modern up-draft carburetors on this engine, rather than try to change the design to down-draft. We suggest this procedure because the manifolding on this car was designed for up-draft carburetion and you would have to do a lot of experimenting, we believe, before you realized any advantages, that is, assuming that you will get some benefit from this change.

I would suggest that you take this matter up with one of your local carburetor representatives, such as Carter, Schebler, Stromberg, Zenith, etc., who will have something substantial to offer in the way of a suggestion, no doubt.

(Should any of our readers among fleet operators or manufacturers have any suggestions to make, the Editor will be glad to pass them along to the inquiring reader.)

●

Tests Show Poor Condition of Average Vehicle

STATISTICS compiled as a result of testing and scientifically adjusting 250,000 cars on the Cities Service Power Prover, indicate that there are few, if any, cars on the road in perfect mechanical condition.

The results of the tests indicate that out of every 100 cars on the road today 99 have faulty ignition timing; in 59 the spark plugs probably would fail when tested; on 97 the carburetor is most likely out of adjustment; and 57 cars have badly pitted breaker points.

The facts brought out are particularly significant in view of the magnitude of the survey. The tests were conducted on all makes and types of cars in over 100 cities throughout the country.

The Power Prover is a machine developed after many years of research by Cities Service engineers. By analyzing the exhaust gas of a car, it accurately reports the mechanical efficiency of the motor.

New Tools Cut Costs

★

Successful fleet operators are constantly seeking ways to reduce maintenance costs without any sacrifice of efficiency. Here is where new and modern DeVilbiss Spray-Finishing and Exhaust Equipment can play an important part—and also effect a great improvement in the appearance of your trucks.

In these major respects, DeVilbiss Spray-Finishing Equipment can be of definite help to you:

By reducing time required for refinishing operations and by faster releasing of vehicles for duty, DeVilbiss Equipment effects lower per mile maintenance cost.

By producing better, more even finishes, it affords greater protection and improves the appearance of your fleet.

That is why leading fleet owners are standardizing on new and improved DeVilbiss Spray-Finishing and Exhaust Equipment and Air Compressors. These operators know that all DeVilbiss Equipment is notable for high quality and long life.

Near you is an experienced DeVilbiss representative, well qualified to offer valuable recommendations concerning your particular refinishing problems. Call him in now, or write us direct.

THE DEVILBISS COMPANY · TOLEDO · OHIO

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Spray-finishing and Exhaust Equipment—Ail Compressors—Hose and Hose Connections
Oil Guns—Other Air-Using Equipment

TROUBLE SHOOTERS' DEPARTMENT (*Continued*)

Smaller Jets Will Probably Cure Trouble

Question: We have installed governors on about fifty of our passenger cars, mainly for safety and economy. We find that when the governor begins to act, the mixture is entirely too rich, and that the economies we had hoped to gain are not actually being realized.

We have been using a popular make of governor in connection with Carter down-draft and Zenith up-draft carburetors. We are at a loss as to how to overcome this difficulty. Can you advise as to some method we can follow to gain the economy and at the same time control the speed?—W. R. P., Atlanta, Ga.

Answer: It is quite possible that in using governors, there is some slight restriction resulting in a higher manifold vacuum. If your drivers are keeping their throttles wide open, after maximum governed speed is reached, this probably causes the excessive fuel consumption. They should be cautioned to watch this wasteful practice.

It may also be possible to obtain jets for these carburetors with smaller calibrations, which would result in more economical operation. We are taking this matter up with the two carburetor companies mentioned, and since you failed to state the make of vehicles in question, we are taking the liberty of having their local representatives in your city call on you and analyze your difficulty, which will be done without obligation on your part. Acknowledgment and appreciation is hereby extended to these manufacturers.

●

Novel Rack for Oxygen Cylinders

PICTURED here is a novel rack for supporting oxygen cylinders in the fleet service station, when not in use.

Notice that the supporting collars are so arranged that they fit down over the valve cap on the cylinder, preventing it from being knocked over.

It would be possible to design such a rack to take two tiers of cylinders by attaching collars with a slightly longer shank between the ones shown.

●

Plug-In Chargers Suggested for Winter

"DEAR MR. FISCHER: I have read with interest the question on page 30 of the February issue, regarding a device for starting truck motors in cold weather. This falls right in line with the plug-in type of battery charger.

"Using the proper grade of winter oil is, of course, a step in the right direction, and will relieve some of the difficulty, but if the storage battery is kept fully charged, I am sure that hard starting will be avoided, since the truck manufacturers have, no doubt, provided the proper sized battery and starter to crank the motors, assuming of course that the battery is kept charged.

"As you know, the efficiency of a storage battery drops off with a drop in temperature, which means that it must be kept fully charged in winter to deliver the same power 'cold' as it would in a partially discharged condition during the warm weather.

"With a charging connector mounted in each truck, and a plug-in type of battery charger delivering at least 5 amperes charge, the batteries in the trucks could be kept up by plugging in each truck every few days. It would also be a good idea to follow this same procedure during the summer, for best service from truck batteries."—*Carl G. Howard, North Chicago, Ill.*

●

Here's One for Mr. Ripley

ONE of our readers writes us that he has a 1929 Hupmobile Century Six, which, he claims, will start on compression when the motor is warm.

In other words, all he has to do is turn on the switch and the engine will start, without stepping on the starter pedal. This car is equipped with the conventional battery system of ignition, and does *not* have any devices such as Startix, Starterator, etc., etc.

This seems nothing short of a phenomenon, since all of us know that mechanical action of some kind is necessary in order to break the points and produce a spark, assuming that the engine stopped with the points *closed*. If it had stopped with the points *open*, there would be no completion of the primary circuit, and hence no spark, either.

Our keenest imagination can only produce the possibility of a defective coil, in which the primary winding has a slight break, or heavy resistance, which causes interruption of the primary circuit and produces the spark as soon as the switch is turned on.

The operator further reports no difficulty in starting or running this vehicle. Knowing all the facts we are going to call on our readers to explain this mystery. What do you think is the cause of it? The Editor will be glad to hear from you.

●

Carbon Removal Practice Among Car Owners

ONLY 16 per cent of car owners had carbon removed every 10,000 miles or less in 1933, a survey by the Ethyl Gasoline Corporation shows. In 1931, the percentage was 32.

"This is just another indication of the tendency of motorists during the past year to operate their cars as economically as possible," says a report of the survey.

Of 3,917 car owners in 146 cities and towns, 849 or 21.8 per cent had carbon removed less frequently than every 15,000 miles; 513 or 13.1 per cent every 12,500 to 15,000 miles; 437 or 11.2 per cent every 10,000 to 12,500 miles; 344 or 8.8 per cent, every 7,500 to 10,000 miles; 152 or 3.7 per cent every 5,000 to 7,500 miles; and 150, or 3.7 per cent, every 5,000 miles or less. 895 car owners had never had carbon removed, and 583 did not know whether the carbon had been removed or not.

ARE YOU ONLY SNIPING AT BATTERY MAINTENANCE COSTS? . . . . . .

In answer to a recent questionnaire sent to representative fleet operators throughout the country, 20% named "batteries" as their most common electrical system trouble. Any kind of trouble is bound to send maintenance costs up, but battery trouble can be particularly costly. Don't be content with sniping at this extra expense. Dig down to the heart of the trouble — the batteries themselves. Get the right batteries. Get Exides!

You can cut down the "extras" with Exides, and lower maintenance costs. Fleet operators in all parts of the country have proved it. Exide Batteries are built for the hardest kind of service, for freedom from trouble, for extra power and long life. They have demonstrated their unfailing dependability in every type of truck, under every condition of road and load. If battery maintenance costs are on your mind, remember—WHEN IT'S AN EXIDE YOU START.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

EXIDE ENGINEERING SERVICE

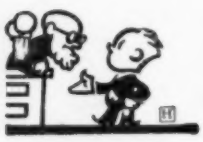
is available to fleet operators without cost. Conducted by trained and experienced battery engineers, it can help you cut maintenance costs.

NRA

Exide BATTERIES

FOR EVERY TYPE TRUCK

Say "I saw it in FLEET OWNER"—It Helps!



JOHN LAW SEZ:

(Recent Court Decisions as Reported by National Highway Users Conference)

ARKANSAS

Municipality Subject to Gas Tax

A MUNICIPALITY is subject to payment of gasoline tax on motor fuel used in propelling its vehicles over the city streets and highways of the State. The municipalities are not exempted in the Act.—*City of Fort Smith v. Watson, Commissioner of Revenues, Sup. Ct. of Ark., 62 S. W. (2d) 965.*

CALIFORNIA

Liable for Truckman's Negligence

WHERE a sales agent for an oil company authorized to sell its products for cash and also upon credit approved by the oil company and where sales agent did not purchase any of the products and where he was required to obey the company's instructions relative to rules and practices and where he furnished his own truck, upon which was lettered the name of the oil company, the court held that these facts were sufficient to sustain the trial court's holding that he was an agent of the oil company and not an independent contractor. The court sets forth the criteria as follows: "Where the one sought to be charged as principal has sold its products to the person distributing those products, and exercises no further control, the relationship is not one of principal and agent, but the person to whom the products are sold is an independent contractor."—*Fischer v. Havelock et al., Dist. Ct. of App. Third District. 25P. (2d) 864.*

FLORIDA

Extra Tank Law Unconstitutional

STATUTE prohibiting auxiliary tanks on motor vehicles held unconstitutional because it discriminates between auxiliary tanks containing gasoline to be consumed by the vehicle which carries it and the auxiliary tanks carried on vehicles in which the gasoline is not intended to be consumed. The court holds it is equally hazardous in either instance and therefore cannot be justified as a police regulation.—*Sweat, Sheriff, v. Turpentine & Resin Factors, Inc., Sup. Ct. of Fla., Div. B. 150 So. 617.*

IOWA

Common Carrier—Nature Of

WHERE person under written contract with merchants collected parcels and brought them to a central building maintained by him in which he sorted and routed the parcels, it was held that he was not a common carrier, as the service was purely private and a "right on the part of the public to demand service must exist before one engaged in transporting freight becomes a common carrier."—*State ex rel Board of R. R. Comm. v. Carlson, Iowa Sup. Ct., Nov. 21, 1933, 251 N. W. 161.*

LOUISIANA

Truck Seized for Tax Evasion

THE Supreme Court upheld the Supervisor of Public Accounts' action in seizing and selling truck and gasoline of person who had no invoice or bill of sale for the gasoline showing that the tax had been paid when he was apprehended.—*State v. Wells, et al. Sup. Ct. of La., 150 So. 848.*

MINNESOTA

Lack of Tools is Negligence

JURY verdict that defendant was negligent in not keeping his motor truck equipped with tools handy, plank or other adequate footing for a jack so that a tire change could be made without parking on the pavement, was upheld. In this case the defendant's truck was stopped on the pavement because of a tire blowout. The truck was not equipped with a plank which could be used as a base for the jack and consequently the truck had to be left on the pavement. The driver stopped a truck of another company and borrowed equipment from it. While the two trucks were so stopped, passenger car ran into one of them. The court held that the jury could consider the fact that the first truck did not have sufficient equipment to make the repair on the shoulder of the road rather than on the pavement itself as an element of negligence. Court further held that the driver had implied authority in an emergency to employ assistants. The court further held that the company which owned the second truck which stopped to assist the first truck was also liable as its negligence contributed proximately to the result.—*In re: Brown v. Murphy Transfer and Storage Co. et al. Sup. Ct. of Minn. 251 N. W. p. 5.*

MINNESOTA

Truck Length Law Interpreted

ALL trucks or truck combinations of trucks and trailers are limited to 40 ft., John P. Arnoldy, Chief of the Highway Patrol, stated in an order issued to the State Highway Department Patrolmen. The trucks and trailers are classed as one vehicle under the law.—*(Ch. 225, Sec. 35, Highway Laws of 1933) Minnesota Highway News, Dec. 18, 1933.*

MISSISSIPPI

This Gasoline is Not Taxable

AN association was formed composed of owners or lessors of tractors, stationary gas engines, cleaning, pressing and dyeing plants, airplanes or other engines not to be operated on the highways of the state. The purpose of the association was to purchase gasoline as economically as possible for the members of the association. An agent was appointed who purchased the gasoline from the oil company and supplied it to the members. The State Auditor brought action to recover the gasoline excise taxes due the State from the Independent Oil Company who has sold gasoline to this association. The Court held that the gasoline so sold to this unincorporated association which was not a partnership and with no power to contract as an entity and therefore was in manner not substantially different from that in which the operator would have handled gasoline as an ordinary dealer.—*Price, State Auditor, et al v. Independent Oil Co. et al. Sup. Ct. of Miss., 150 So. 521.*

NEW JERSEY

Bus Co. Liable for Baggage in Aisle

WHERE baggage extended into aisle so that driver knew or should have known of the obstruction, the bus company is liable for the injury sustained by a passenger falling over the baggage.—*Holda et al. v. Public Service Co-ordinated Transport. Sup. Ct. of N. J., 168 A 753.*

TEXAS

Car With Defaced Numbers

PERSON who buys an automobile knowing that the identification numbers had been removed and numbers of dismantled truck substituted thereon cannot acquire any valid title to such automobile. Such automobile cannot be rebuilt with parts of other junked automobiles in order to be registered as a "rebuilt" automobile. —*Gabert v. Eastus, Ct. of Civ. App. 62 S. W. Rep. (2d) 618.*

Ross Steering

REDUCES FATIGUE

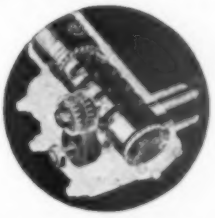
For the Driver

Ross provides a secure ease of handling that permits long hours behind the wheel with minimum driver fatigue...a real safety factor.

It is possible to maintain faster, harder schedules with cars, trucks or buses that have Ross Cam and Lever Steering. Drivers can steer with greater confidence and security... and there are fewer accident reports. Adjustments, while seldom necessary, are more easily and accurately made... Nearly 100 bus and truck manufacturers have adopted Ross as standard equipment. Write for information regarding Ross Gears for Replacement.

Ross Gear and Tool Company · · · · Lafayette, Indiana.

ROSS



CAM & LEVER STEERING

Say "I saw it in FLEET OWNER"—It Helps!

"Petrogas" to Be Marketed

ARRANGEMENTS have been made by Shell Development Company of San Francisco for the manufacture and distribution of a new patented automotive-refrigerating system, known as the "Petrogas" system, which it has perfected. McCord Radiator & Manufacturing Company of Detroit, Mich., have been made the exclusive licensees under the patent and will proceed immediately with preparations for marketing.

The equipment will consist of a valve system permitting easy conversion of automotive equipment to the use of "Petrogas" as motor fuel, and of a refrigerating coil to be installed in a motor vehicle body. In this coil the expansion of "Petrogas" furnishes refrigeration sufficient for the preservation of perishable foodstuffs in transit or for air conditioning of buses and other motor carriers.

As a motor fuel "Petrogas" is comparable to premium gasolines, while its cost to the consumer is not expected to exceed that of ordinary non-premium fuels. (EDITOR'S NOTE: We'd suggest that you write to McCord Radiator & Mfg. Co., Detroit, Mich., for further details. This system was fully described in our March, 1932 issue. Mention of FLEET OWNER when writing will help you get prompt attention).

●

Modern Freight Unit Has Aluminum Body

IN a semi-trailer freight van appearing in a series of shows and highway parades sponsored by The Brockway Motor Company, light weight is achieved by constructing the trailer body of aluminum. This unit, which consists of a semi-trailer with round-nosed body, hauled by a Brockway tractor, can be truly said to be one of the most modern of its type.

The unit was designed to keep within the legal gross load limit of 40,000 lbs. imposed by the State of Connecticut. The aluminum body, weighing approximately 2,000 lbs. with fittings, weighs about 2,500 lbs. less than a conventional body built out of heavier materials for a similar chassis. This estimate takes into account the larger size necessary to carry 2,500 lbs. extra payload. The outside dimensions of the unit are: 24 ft. Overall length, 96 in. width, and 6 ft. 8 in. height, while on the inside it is 89 in. wide and 6 ft. 4 in. high in the clear; the loading capacity is twelve tons.

The 55 per cent reduction in weight can be attributed not only to the lighter weight of aluminum itself, but also to the extensive use of aluminum structural members made by extrusion, a process particularly applicable to aluminum. This metal working process is analogous to the squeezing of tooth paste from a tube. By its means can be made not only the standard structural shapes, angle, channel, I-beams and Z-sections, but also complicated special sections.

By this process, a portion of the roof, the top rail and a means of securing drip molding, carlines and side posts can be combined in a single extruded section, the process requiring but a single metal die. At the same time, a smooth, rounded outer contour is preserved.

Another case where a single extruded section simplifies construction is in the rear sill and tailgate support. In addition, there are several sections used which are simpler of design, yet have features which would be difficult to obtain by rolling because they do not afford any draft or taper. In this category are the slats, carlines, swipe rail and side posts. And finally, there are standard extruded structural shapes which could have been made by either rolling or extrusion, such as bolster channels and moldings of various kinds.

Aside from extruded members, aluminum is employed as sheet for the side and roof panels and for the tail gate; as corrugated sheet overlaid with tread plate for the floor; and as formed sheet for the rounded nose. Aluminum castings are used to finish off the roof rail at the corners. By their means, the regular roof rail section is turned through a right angle about a vertical axis at the corners of the roof panel.

While aluminum bodies are often lacquered or painted, this one is in the natural finish; the metal was treated with steel wool and oil and then simply waxed. From the standpoint of long life, this is found to be sufficient treatment for a metal that will not rust or easily corrode in the atmosphere. Maintenance costs are obviously low in a body which requires little or no refinishing, while depreciation in strength through exposure to the weather is practically non-existent.

●

Truck Engineers Address Met. Section S. A. E.

NINE of the leading truck engineers of the industry addressed over three hundred members and guests of the Metropolitan Section of the Society of Automotive Engineers at its regular monthly meeting last month. F. K. Glynn of the American Telephone & Telegraph Co. acted as chairman of the meeting in which the subject of truck design as affecting maintenance and operation costs was treated.

Each of the speakers dealt with particular features of their respective vehicles intended to minimize operation and maintenance costs. Among the items stressed were the use of valve inserts; cam-ground pistons; removable cylinder liners; improved cooling, especially around valves; better designs of combustion chambers; improved cams and camshafts; overhead valves with springs on push-rods as well as on valve stems; drop-forged main bearing caps with tandem bolts; thin-walled steel-backed bearing liners; steel-asbestos exhaust-manifold gaskets; better pump glands and air-compressor drives; improved thermostats; the use of alloy cast iron for several wearing parts; automatic valve lash adjusters; and ease in engine removal.

Some speakers stressed the need for reduction in fuel consumption as a highly important factor in reducing operation costs, and the need for minimizing the total weight of the vehicle was also emphasized. Alex Taub (Chevrolet) mentioned that changes in combustion chamber and valve arrangements in the Chevrolet engine had made it possible to secure fuel consumption rates as low as 0.545 lb. per b. hp. hr. even at speeds of 3400 r.p.m.

In respect to chassis design, some of the factors dealt with were: full floating axles; better and more convenient lubricating means; reduced oil and grease leakage; use of graphite-bronze bushings and of needle-bearings; means for reducing impact loading; greatly improved alloy steels for many parts and of alloy cast iron for brake drums; better ventilation of clutch and brake parts; improved weight distribution as affecting tire wear; better springing to reduce pitching; frame deflection as affecting body troubles; possible streamlining as affecting fuel consumption; rear engine mounting; and new forms of steering gear design to reduce the effort required in steering. Some trucks with cab over the engine were also described.

as WE GO to PRESS

(News of the Truck Industry)

PRESIDENT ROOSEVELT signed the Trucking Code, called the biggest event in the trucking industry, on February 10th, making it effective February 25th, 1934. By the time you receive this, you'll most likely have had the opportunity of getting a complete copy of the Code. If not, just drop a line to American Trucking Associations, Inc., Transportation Bldg., Washington, D. C. Your local trucking association can also help you out with a copy of the code. It's too voluminous to reproduce in this publication, and what with complete copies generally available, somewhat unnecessary.

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BRANCHES of the Autocar Company in Philadelphia, Baltimore, Washington, Richmond, St. Louis, Camden and Atlantic City will sell and service Studebaker trucks in addition to Autocars, it has just been announced by Robert P. Page, Jr., president of Autocar. In all other territories the two organizations will operate independently, except that the Autocar Company will handle the sale of Studebaker trucks to certain national accounts having headquarters in New York City. Executives of both companies emphasized that this is a sales and service policy only.

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THREE cab-over-engine models head the General Motors Truck Company's line for 1934. These have a weight distribution of 1/3 front and 2/3 rear. The attractive lines of the cab-over-engine models, ease of removal of complete power-plant and better weight distribution are the main features. Models with set-back front axles are found in the T-51 to T-84 line, while models T-18 to T-43T have the conventional axle position. All G. M. C. trucks are powered with their own over-head valve engines, having inserted exhaust valve seats and other special features. Illustrated brochure will be sent on request to General Motors Company, Pontiac, Mich.

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A WIDE range of transportation is offered in the new Dodge trucks for 1934. The commercial cars are offered in four types; the 1½-tonner is offered on four wheelbases; there are also three sizes in the 2-ton series; and the heavy-duty types include the same line of 2, 3 and 4-ton models as last year, with a number of minor mechanical changes. J. D. Burke, director of truck sales for Dodge, will be glad to send you details of the complete line, or of any of the series.

A WESTERN Bus and Truck Conference will be held in Salt Lake City, Utah, June 25th, the American Legislators' Association announced recently. California, Montana, Utah and Wyoming, by action of their state legislatures, have already agreed to participate. Three of these states have appointed delegates. Similar legislative action is under consideration in other Western states. Eleven states, in all, have been invited to the conference.

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THE appointment of A. L. Struble as sales manager of the Truck Division of the Reo Motor Car Company was anounced recently. Mr. Struble succeeds Carl Parker, resigned, and has been with Reo three years. One of his most notable accomplishments was the organization of a school for Reo truck salesmen. The course is based largely on the Reo Ability Rating System and the Reo truck performance gauge. Best of success to you, Mr. Struble!

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NEW Studebaker trucks for 1934 were recently announced. All of the models have been strikingly streamlined and a new 3-4-ton chassis has been added to the line. The new chassis is powered by a Waukesha motor which develops 110 h.p. at 2,800 r.p.m. A strong dark red has been adopted as the standard truck color. Five different models are offered, with capacities of from 1½ to 4-tons.

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A NEW monthly publication entitled "Aluminum News-Letter" has just been launched. It is designed to acquaint those interested in business and industry with the most recent developments in the aluminum industry. Interested firms may have their names placed on the complimentary mailing list by writing to Aluminum Company of America, 1861 Gulf Bldg., Pittsburgh, Pa. Mention of FLEET OWNER will help to identify your request.

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APPOINTMENT of Ray J. Fitness as chief engineer of the Reo Motor Car Company is announced by Ray A. DeVlieg, works manager. Mr. Fitness is one of the most widely known engineers in the industry. He comes to Reo direct from Chrysler, where for the last three years he has been experimental engineer. In all, Mr. Fitness has been associated with Chrysler Motors for ten years, and has seen 27 years' service in the automobile business.

THE McCord Radiator & Mfg. Co., of Detroit, has just completed arrangements with The Shell Oil Company for the exclusive manufacture and sale in America under their patents of a fuel and refrigerating system for trucks, employing Petrogas, a Shell product similar to Propane. In this system, Petrogas in compressed liquid form is carried in containers under the chassis and the fuel is led by pipe-line from these containers to a freezing unit located within the truck body, and thence to a mixing valve which communicates directly with the engine manifold. This system was fully described in our March, 1932, issue.

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AN interesting booklet entitled "International Fire Trucks" has been issued by International Harvester Company, Chicago, Ill. Although it is listed as a "catalog" it illustrates and describes fire apparatus in use by municipalities throughout the country. Fire departments and those responsible for fire prevention work will find this booklet of interest. Free copies may be obtained on request.

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SHIPMENTS of Reo, for the month of January, on both passenger cars and trucks, showed a 33% gain over the same period of 1933. Truck shipments were double those of a year ago, according to E. G. Poxson, general sales manager of the Reo Motor Car Company. This is the fifth consecutive month that Reo shipments have shown an increase over the corresponding month of the previous year, he states.

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WE learn that T. L. Preble has recently assumed charge of the fleet of Tidewater Oil Company, with headquarters in New York City. You will recall that Mr. Preble has previously been connected with Pierce-Arrow, Studebaker, General Motors Truck Company and the White Company. He is prominent in the truck industry, and we wish him the best of success in his new position.

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THE 1934 Automotive Service Industries Show will be held in the Cleveland Public Auditorium, November 5th to 9th inclusive, according to an announcement made by the three sponsoring organizations, National Standard Parts Association, Motor & Equipment Manufacturers Association and Motor & Equipment Wholesalers Association.

READER SAY-SO

(Picked at Random from The Editor's Mail-Bag)

Annual Note of Approval

"WE are very grateful for your publication FLEET OWNER and wish to express our appreciation for the pleasure and assistance it has given ourselves and those working with us for the past year.

"Your publication is a very desirable part of our every-day life and we trust that we may look forward to receiving it during the coming year.

"I regret that I have not been a better member of the 'Question-of-the-Month Club' but my work keeps me from the office a good part of the time and I am unable to participate in this very desirable feature of your magazine consistently. Nevertheless, this department has afforded an incentive for a more thorough study of some of our operations and is highly appreciated." *—Howard A. Evans, Asst. Supt. Motor Transportation, Phillips Petroleum Co., Bartlesville, Okla.*

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"Bigger and Better"

DEAR Editor: "I do not believe I have ever advised you as to how much I enjoy reading FLEET OWNER. This magazine is thoroughly read by the writer, and since the size has been changed to a larger one, it is more readily filed for future reference."*—R. N. Wildblood, Purchase Clerk, New Jersey State Highway Department, Trenton, N. J.*

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We Appreciate It, Mr. Paul

"WE like to participate in your 'Question-of-the-Month' department and regret that sometimes we cannot answer all your questions, but we do the best we can. We are very much interested in these monthly questionnaires and also in the answers from other fleet operators."*—Clyde Paul, Manager, Saunders System, Houston, Tex.*

Likes All Departments

"IF a month goes by and I miss receiving FLEET OWNER, I certainly *miss* it. As it is sent to our main office, sometimes the office help will take it and then I will never see it. We have some very difficult problems at times and I must say that I get some very good information out of this magazine and really appreciate it.

"I believe your page 'Stripping the Thread' is great; also the Trouble Shooters' Department and the Question-of-the-Month Club. I presume your other readers are like myself, and read every advertisement and reading page from cover to cover. It's really very interesting and educational to read the letters and problems of other people in the field. We operate a fleet of 25 trucks, 8 passenger cars and various other outdoor equipment." *—O. T. Miller, Garage Supt., Land Construction Co., St. Joseph, Mo.*

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Suggest a Better One?

"DEAR Mr. Fischer: Probably in common with many others, I have often wondered why your heading for the Editor's Column should carry the title 'Stripping the Thread,' and am pleased to note in a recent issue that you have requested suggestions for a better one. May I propose 'Brake Chatters' as being more appropriate."*—L. R. Davis, Sales Engineer, Truck and Bus Tire Department, United States Rubber Co., New York City.*

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It's a Promise

"DEAR Mr. Fischer: Your publication FLEET OWNER has been such a help to me since we have been receiving it that I feel it's time I wrote you and let you appreciate it. In the future I hope to continue with what I have just started this month, by returning the Question-of-the-Month blank filled out, which you will find enclosed."*—Dwight H. Woods, Engineering Asst., Nashville Gas & Heating Company, Nashville, Tenn.*

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How's "Penetrating Oil"?

"I NOTED in a recent issue some controversy regarding the title of your Editor's Column. After reading this, it occurs to me that the title of this page should indicate in terms of trucks and automobiles the contents thereof, or value of such a page. I would, therefore, suggest that we call this page 'Penetrating Oil' instead of 'Stripping the Thread.'

"My reason for this suggestion is as follows: The contents of this page are to the truck operator the same as penetrating oil is to the mechanic. Penetrating oil loosens casting, nuts, bolts, valves, etc., for the mechanic, which could not be loosened otherwise, unless at a higher cost of drilling out, new parts, etc. It seems to me that an Editorial Page similar to that in FLEET OWNER does that very thing for the fleet operator.

"The man best versed in any particular line is the man who has at his finger tips the greatest amount of information obtained through the experience of the other fellow." *—M. G. Welsh, Supt. Motor Vehicle Dept., Tide Water Power Co., Wilmington, N. C.*

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From a Staunch Admirer

"WHILE you don't hear from me very often, I have always been a staunch admirer of your magazine, FLEET OWNER, and find among its valuable leaves many interesting and advanced articles. Being an engineer, I must say that your publication is quite complete in each issue. Again let me offer my approval and pleasure at being able to receive it each month."*—E. M. Flint, 1214 W. Monroe St., Chicago, Ill.*

150. **Worth More Than It Costs.** That's what we think of this free sample. Everyone seems to be having plenty of grief with tire chains this winter. Now you can repair broken cross-chains without the use of tools, and your drivers can do it right out on the road. Number 150 brings absolutely free a sample set of the well-known "Monkey Links." They're self-closing. The set you will get contains an assortment of three different sizes of links. It should be mighty handy just now. As the supply is limited, first come first served.

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151. **Hang It On the Wall.** This attractive wall chart will help to cover up some of those unsightly brick walls that yours truly has seen in some fleet garages. But its usefulness does not stop there. It's an attractive chart that lists and prices a well-known line of replacement fenders. Besides most of the popular cars from as far back as 1924 to the present date, it also includes some of the more popular truck models as well. When you want new fenders in a hurry, the manufacturer suggests that you use your chart and get after your jobber. We suggest that you fill in No. 151 on our coupon below if you want a free copy of this wall chart.

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152. **Not as Easy as It Looks.** Anyone can install piston rings. But there's a right and several wrong ways of doing this work. A manual that shows the proper types of rings to use for each engine, where to use oil rings, where to use expanders, etc., etc., has just been published, but it only covers passenger cars. If you have any Chevvies, Pontiacs, Plymouths, Fords, Buicks, etc., in your fleet you'll no doubt want a free copy of it. Get it by including No. 152 on the coupon.

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153. **Good Jacks Save Your Jack.** Time lost on the road or in the shop because of inefficient jacks is very costly. Deaths and injuries due to defective jacks are even more costly. In our Question-of-the-Month survey on Jacks, it was disclosed that fleet operators, generally, prefer the hydraulic jack to the mechanical kind. What we started out to say is that you can obtain the latest Silver King Hydraulic Jack catalog by putting No. 153 on our coupon below. It's free for the asking.

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154. **No More Jiggling or Shimmying.** We're not sure of the spelling, but you know what we mean. No doubt you have had trouble at some time or other with front end shimmy. Excessive wheel wobble, besides being annoying and dangerous, is ruinous to tires. And tires cost money. No. 154 covers literature on a new front-end steering stabilizer that is bound to banish front-end troubles forever, so they tell us. Further information, without obligation, can be obtained. 154 is the number.

155. **Free Refinishing Specifications.** Read this twice before putting down the number. If you would like to have a survey made of your fleet, without obligation, and individual refinishing specifications worked out to meet your particular requirements, Number 155 will bring further details. Since each set of specifications is made to order, there is no printed literature. This service promises to reduce to a minimum the number of days your vehicles need to be in the shop for refinishing. After you've read this the second time, and would like further information, indicate your wishes with Number 155, please.

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156. **"Give Us a Better Joint."** This seems to be the "universal" plea of many fleet operators, especially those with heavy-duty units. An interesting book has been prepared in direct response to the demand for better universal joints. It illustrates and describes a brand new type of heavy-duty universal joint especially developed for the heavy-duty market. It's called "The Rzeppa Universal Joint in Transportation" and Number 156 brings it, free, gratis, for nothing.

NOTE:
Literature listed here is all "Hot Off the Press" and is guaranteed to be of interest to fleet maintenance men.—H. C. F.

157. **Not a Fly-Swatter.** Although it will deliver a clean blow without injury to the surface struck, it is not recommended for swatting flies on the boss' bald head. It *is* recommended, however, for driving bushings, ball bearings, piston pins; for pounding stubborn tires off rims; for light machine shop operations; and for all other uses where a soft-faced hammer is demanded. An interesting circular that illustrates and describes an even more interesting line of rawhide-faced hammers will be sent to those requesting Number 157. And, which is more important, the rawhide faces are renewable at a very small cost. Number 157, if you will.

WHAT DO YOU READ?

HERE'S a hand-picked assortment of literature that is offered to you entirely without obligation.

We've even made it easy for you to get it. Fill in the coupon below, mail to the Editor, and let us do the work. We'll ask them to send it at once and not to bother you with salesmen, either.

158. **How to Reduce Oil Costs.** Get out your cost sheets and check up on how many gallons of oil you used last month. Figure what it cost you in dollars and cents. Then sit down and fill in the coupon below, if you are interested in cutting those very figures right in half. If you are skeptical, Number 158 will bring you full information to back up the claims of this refiner of high grade motor oil. And you needn't feel obligated to buy anything, either.

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159. **Volt-O-Matic.** A new word, intended to mean, we presume, automatically controlled voltage. With this new generator a heavy charge is put into the battery when the drain is heavy; automatically cutting down the current supply as the battery becomes charged. An interesting booklet, "Volt-O-Matic Generators," explains the subject much more thoroughly than we can do it here. Number 159 on the coupon makes it easy to get a free copy.

The Editor, FLEET OWNER, ...1934
90 West St., New York, N. Y.

Kindly send me without obligation, the following free books mentioned in the.....issue. (Literature will not be sent unless firm name is given.) Order by number.

....

....

Firm Name .....

Address .....

City and State .....

Your Name .....Position.....

QUESTION of the MONTH

"By far, one of the most valuable departments to be found in any automotive publication. Every fleet man should be delighted to cooperate."—A Reader

Here are Some of the Most Interesting Replies to Question No. 40:

Both Iron and Aluminum for Light Trucks

"BOTH iron and aluminum pistons are preferred by us for passenger cars and light trucks, while for the heavy-duty trucks we prefer iron. However, we do not replace iron pistons with aluminum ones, but we sometimes replace them with special light-weight iron pistons. Our replacement pistons are purchased from jobbers; also dealers.

"In our opinion, iron pistons seem to last longer and are therefore preferable. Our chief trouble with pistons is caused by the heads coming off. Piston expanders have been tried and seem to slow down the speed of the motors."—*Florida Public Service Co., John A. Wilhite, Supt. Trans., Orlando, Fla., operating a fleet of 60 trucks, 75 pass. cars and 28 other vehicles.*

●

Prefers Aluminum Pistons for All Vehicles

"WE prefer aluminum alloy pistons for passenger cars, light trucks and also heavy trucks. We replace iron pistons with aluminum ones in all types of vehicles that we have. We do not use special light-weight iron pistons. We use any good make of alloy piston.

"Aluminum pistons, in our opinion, give longer wear and better service in both light and heavy-duty vehicles. The average life of such pistons in our fleet is two years or more. We have had very little piston trouble and have not used piston expanders. We buy replacement pistons from automotive jobbers."—*M. B. Harris, Miller & Rhoades, Inc., Richmond, Va., operating a fleet of 25 trucks, 3 passenger cars and 15 other vehicles.*

●

Prefers Iron Pistons for Truck Work

"CAST iron pistons are preferred by us for light and heavy-duty trucks, with aluminum pistons for passenger cars only. We do not replace iron pistons with aluminum; neither do we use special light-weight cast iron pistons.

"With reference to the relative wearing qualities, we prefer cast iron, as it will wear longer, will keep the speeds down, and will help to maintain sensible driving speeds and consequently will reduce engine wear.

"Our principal piston troubles in the past have been due to cracked and broken pistons; also the top lands burned out. Replacement pistons are obtained from jobbers and vehicle dealers."—*L. K. Jay, Supt., Sherwood Bros., Inc., Baltimore, Md., operating a fleet of 150 trucks.*

Local Conditions Affect Piston Performance

"IN answering Question No. 40, I am taking local conditions into consideration. I do not believe that our experience is typical of other localities.

"The reason we prefer cast iron pistons throughout is because aluminum alloy pistons are a complete failure in the Imperial Valley (Calif.). The theory is that volcanic ash imbeds itself in the pistons and acts as an abrasive on the cylinder walls. Modern oil-bath air cleaners seem to help a lot, but they are not a complete cure for this trouble.

"With cast iron pistons of special light weight and with mild oil rings and an oil-bath air cleaner, we have practically stopped all premature cylinder wear.

"These special light-weight cast iron pistons have worked out successfully in both touring cars and trucks on Model A Ford chasses. When we first installed them we expected to have a little more bearing wear. We have several 1929 models that have run as far as 30,000 miles with no indications of premature wear, which is better than we got out of the original equipment. However, our trucks are seldom driven at high speeds.

"Piston expanders have been found o. k. for patch-up jobs on split-skirt alloy pistons. We get our replacement pistons from jobbers."—*W. H. Rhodes, Garage Supt., Imperial Ice & Development Co., El Centro, Calif., operating a fleet of 40 trucks and 5 pass. cars.*

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Iron Wears Better, Less Peppy; Prefer Alloy

"THE use of aluminum alloy pistons in passenger cars, trucks and buses is practiced by us wherever possible. Wherever we can, we replace iron pistons with aluminum, when this can be done without destroying the balance. We do not use special light-weight iron pistons.

"Our opinion as to the relative wearing qualities is that iron wears better and helps to control the oil, but gives less peppy performance. In spite of this fact, also since iron might cause more vibration and bearing wear, we prefer aluminum. We get about 100,000 miles out of iron pistons in our buses and about 50,000 miles out of aluminum pistons in similar installations.

"The iron pistons that we formerly used weighed twice as much as the aluminum ones, and excessive bearing trouble developed until we switched. We do not consider piston expanders a good repair. They are o. k. if the car is to be traded or sold.

"Aluminum pistons are ideal, excepting for the excessive ring groove wear that develops in them. For that reason they cannot be expected to control oil as

A FEW MORE PISTON EXPERIENCE REPORTS *(Continued)*

well as iron pistons. Our entire fleet consists of more than 200 autos, 25 buses and about 30 trailers. This fleet is spread out over the entire territory, but serviced here."—*Edward J. Simpson, Supt. Equip., Interstate Power Co., Dubuque, Iowa.*

●

Aluminum Pistons Favored Throughout

"OUR preference in piston material is aluminum, for passenger cars, light and heavy trucks, and buses. We replace iron pistons with aluminum in Model 52 Whites and Studebaker Commanders. We do not use special light-weight iron pistons.

"In our opinion, the wearing qualities of aluminum pistons compare favorably with those of iron, and the former is favored by us. In fact we get as much as 86,000 miles out of aluminum pistons in bus work, as against 50,000 out of iron pistons. With the exception of three broken pistons, we have had no serious piston troubles.

"With reference to piston expanders, we have some of them installed in light trucks, but not long enough to provide conclusive experience. Pistons are obtained from jobbers and piston manufacturers."—*Bill Wilson, Supt., C. S. S. & S. B. R. R. Co., Michigan City, Ind., operating a fleet of 18 trucks, 14 buses and 11 pass. cars.*

●

Trying Aluminum Pistons in Heavy-Duty Truck

"AT the present time we have one Mack A. C. truck using heavy aluminum pistons as an experiment. In all our trucks of this type and similar ones having large bore motors, we find that the top ring and groove burns out. There is a drop ring piston used to eliminate this, but according to our experience it does not work out. We are therefore trying out the alloy pistons. We do not use special light iron pistons.

"For passenger cars and light trucks we prefer aluminum pistons, although we usually do not bother much with the passenger cars. We have yet to find out what the relative wearing qualities are between iron and aluminum pistons for heavy-duty trucks. Our pistons are furnished by the jobber, in conjunction with complete rebore jobs."—*G. H. Armston, Shop Supt., Frenzel Bros. Co., Chicago, Ill., operating a fleet of 25 trucks, 15 passenger cars and 10 other vehicles.*

(Please tear out and mail to The Editor, The Fleet Owner, 90 West St., New York City)

Question No. 42—Spark Plugs

On new vehicles, when are spark plugs replaced for the first time? (Mileage or time period)
Pass. Cars ..... Light Trucks ..... Heavy Trucks ..... Buses .....
What is your average mileage per set of plugs? (Please indicate below)
Pass. Cars ..... Light Trucks ..... Heavy Trucks ..... Buses .....
What are your most common spark plug troubles? (Please explain) .....
.....
Do you have any pre-ignition trouble? ..... On what vehicles? .....
Do you have trouble with fouled plugs? ..... On what vehicles? .....
Do plug points burn away prematurely? ..... On what vehicles? .....
Are original equipment plugs satisfactory? ..... Should better ones be used? .....
Do you overhaul spark plugs? ..... What methods are used? .....
..... Does this practice help lower your costs? .....
Do you prefer a 1-piece or a 2-piece plug? ..... Why? .....
Do you depend on "trick" plugs for bad oil-pumping motors? ..... What make? .....
Have you had trouble with porcelain breakage due to shop or service handling? .....
What has your experience been with mica plugs? .....
Which spark plug size has been most serviceable? (Pleasecheck below)
☐ ⅞-inch; ☐ 18 mm. Metric; ☐ 14 mm. Metric; Others .....
Explain any difficulties that you have had with any of the above sizes .....
.....
What make of plug has been most satisfactory for replacement? .....
What is your source of supply on spark plugs? (Please check below)
☐ Jobber; ☐ Vehicle Dealer; ☐ Vehicle Mfr.; ☐ Plug Mfr.; Others.....
Remarks .....
.....
We operate .....Trucks; .....Buses; .....Pass. cars; .....Other Vehicles

Note: If you cooperate with us and fill out this questionnaire, you will be entitled to a tabulated report covering all of the answers.

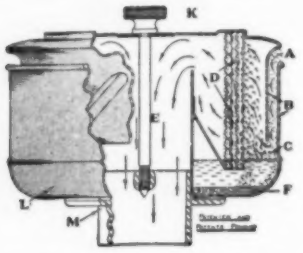
Swap your Maintenance experience with other fleet operators in this easy, convenient way. We do the work. You get the benefit.

Name of Firm .....
Address .....
City and State .....
Your name ..... *Position*.....

for ROAD *and* SHOP

"Air-Maze" Air Cleaners

THE oil-bath type of "Air Maze" air cleaner is announced by its makers as "The completely protective air filter for all automotive equipment."



A sectional view is shown here. The dust-laden air enters on all sides of the unit in a large but relatively thin vane at A. An induced spiral and rolling motion forces a large part of the grit and dust to deposit on the oiled surfaces of inner and outer cases at B. Additional dust is washed out when the air comes in contact with the turbulent oil bath at C. The semi clean air is then thoroughly filtered while passing through the 12-layer filter element D, which is kept washed clean and re-oiled by the splash of the oil bath. The clean air proceeds to the motor at E, while the dust is washed downward into the sump at F.

That's how it works. For interesting literature and other details, address Air-Maze Corporation, Caxton Bldg., Cleveland, Ohio. You'll mention FLEET OWNER, won't you?

●

New Line of Pyro-Action Spark Plugs

UNITED American Bosch Corporation has begun the manufacture of a new line of Pyro-Action Spark Plugs in its plant at Springfield, Massachusetts, under license from Robert Bosch, A.-G. These new plugs are designed and engineered to meet the trying conditions encountered in the modern engine brought about by greatly increased engine speeds, terrific temperatures, higher compression ratios, and greater road speeds.

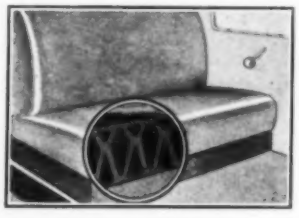
This line of plugs being manufactured at Springfield is identical in design, material. and methods of construction with the new line of Bosch spark plugs being manufactured at the Bosch plant in Stuttgart, Germany. The same equipment is used, and the same rigid system of test and inspection is employed. The supervisory personnel is Stuttgart trained.

Outstanding features claimed for the new plug are oversize center electrode with oversize seal screw, oversize shell, and new insulator made of Pyranite, a fine-grain synthetic ceramic composition of close, non-porous texture. It resists the absorption of oil and gas, and has an exceptionally wide heat range. This permits fewer types and simplification in specifying for various engine conditions. 12 spark plug types now meet all standard engine requirements.

●

For Better Riding and Longer Wear

THE man who checks repair and replacement costs knows how expensive it is to keep truck cushions in good condition. According to the Karpex Manufacturing Company, Indianapolis, Indiana, this item of expense can be practically eliminated by equipping trucks with Black Diamond



all-rubber back and seat cushions. These cushions are patented and moulded in one-piece in an exclusive design, the maker states.

Constructed of semi-sponge rubber, these cushions assure positive air circulation and suspension of body-weight instead of support, resulting in greater riding comfort. During a period of more than three years, in both laboratory test and actual use, this grid design has been found capable of long wear, under severe punishment.

Black Diamond all-rubber back and seat cushions cannot break, sag, or damage upholstering, it is claimed. They are available in any size or shape to fit any truck cab. Further information will be forwarded when requested on company letterhead. Mention of FLEET OWNER will assure prompt service.

●

New Truck-Bus Tire Handbook

THE 1934 edition of its 40-page booklet on truck and bus tires, designed to distribute information of more or less technical nature to all those interested in tire performance, and titled "Operators Hand Book" has just been published by The B. F. Goodrich Rubber Company, Akron, Ohio, and is now available upon request to the manufacturer, free of cost.

The booklet lists all Goodrich tires for trucks and buses, gives their complete specifications and describes the right tires for varied purposes. A large number of specification tables are included.

Methods by which operators of trucks or buses may easily determine the tire cost per mile on each installation are described. A table giving the weights of various commodities, and a changeover guide for 1½ ton trucks are also among features of the publication. When writing for your free copy, mention of FLEET OWNER will insure prompt service.

●

Pedrick Piston Ring Manual

AS part of its extensive technical service to the trade, the Wilkening Manufacturing Company, maker of PEDRICK Heat-Shaped piston rings, has prepared a 12-page manual of piston ring installations applicable to passenger car engines and commercial vehicles using passenger car type engines.

The booklet points out the different kinds of piston ring installations required by different engines, whether worn, reconditioned or new. The purpose of the manual is to help fleet service managers and mechanics ren-

der more expert piston ring service, through having a dependable knowledge of how to select and use the correct piston rings.

Free copies are available to fleet operators, of course. Mention of this publication will insure prompt service.

NEW STUFF *for* ROAD *and* SHOP (*Continued*)

Utility Six-Wheel Units

IN the Utility Six-Wheel Attachments there are several fundamental principles involved which make possible strenuous service without strains on the truck frame and working parts, according to Utility Trailer Company.

A two-point spring and frame suspension on each side back of the cab provides perfect distribution of the load weight; and two universal joints and rocker arms provide free vertical axle movement to meet road obstacles without twist of the frame and without putting additional strain on the drive axle, wheels or tires, the Company points out.

These features also are said to minimize scuffing between fore and aft tires on the drive and attachment axles in making turns, to a degree even less than is present between adjacent dual tires.

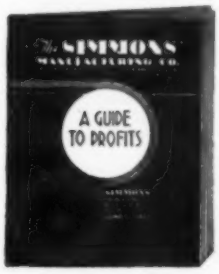
A tire engineer suggests that if a six-wheel unit is to be driven on one axle only, the power should be applied to the last axle However, with the Utility unit, it is recommended to drive on the center axle, since application of driving power tends to transfer the load momentarily from the unit axle to the drive axle, thereby increasing drive axle traction.

Utility Six-Wheel Units have been adapted to all types of trucks and the latest models which are now being supplied to the users of 1 and 1½-ton trucks are claimed to enable double the payload to be carried without sacrificing speed. Catalog on request, by addressing Utility Trailer Company, Los Angeles, Calif.

●

A Guide to Savings, Too

A NEW catalog with complete up-to-date information on service parts for Fords and Chevrolets, has just been issued by the Simmons Manufacturing Company, Cleveland,



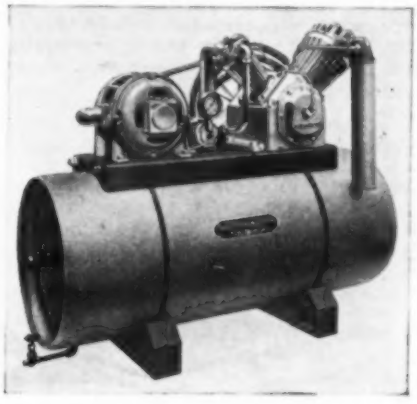
Ohio. This new catalog is known as Simmons "Guide to Profits" Catalog No. 110. A free copy may be secured by writing to the company.

Worthington Air Compressors

INTRODUCTION by Worthington Pump and Machinery Corp., Harrison, N. J., of a complete line of V-type, two-stage, air-cooled air compressor units especially designed for automotive service, is announced.

The new compressors, equipped with "feather" valves, are designated as Type VA-2 and are offered in a range of sizes to furnish from 3.9 to 34 cubic feet of air per minute at pressures up to 200 pounds per square inch.

Numerous features are incorporated, including counter-balanced crankshaft, full-floating wrist pins, honed cylinders, silent suction muffler and Timken roller bearings. Motor and compressor, connected through a Worthington Multi-V-Drive, are mounted on a channel base resting upon a horizontal A. S. M. E. air receiver, the base being joined by straps to sturdy iron floor saddles.



Enclosed in the crankcase is a centrifugally-operated automatic mechanical unloader, providing positive operation of by-pass needle valve for unloading the compressor in starting. A spring-loaded air safety valve assures dependability of action and gives adequate protection against excess pressure. An air-operated electric pressure switch provides fully automatic start and stop control.

●

Kompak Heater Acquired by Bosch

OFFICIALS of the United American Bosch Corporation, Springfield, Mass., have confirmed the report that that company has acquired the assets and good-will of the Kompak Company, of New Brunswick, N. J., manufacturers of automatic gas water heaters.

The entire equipment and organization of the Kompak Company has been moved to Springfield, where manufacturing will be continued in the American-Bosch plant. Mr. R. W. Washburn, Secretary and Assistant Treasurer of the Springfield firm for many years, will direct the operations of the Gas Appliance Division formed by the acquisition of the New Jersey company.

Mr. H. J. Long, of Kompak, and looked upon as a pioneer in the gas water heating industry is associated with American Bosch in engineering and development work. The complete line of copper water heaters developed by Mr. Long, including types for small homes, large homes, apartment houses and institutions, will be manufactured in Springfield. The entire Kompak sales organization will continue to represent the new owners in the field.

●

Concentric Valve Seat Grinder

THE Model C grinder shown here was developed to meet the demand for a low-priced valve seat grinder that would do good work. It makes full seat contact and can be used to grind both cast iron and hard steel seats.

A micrometer limit stop makes it possible to set the grinder to remove the few thousandths necessary to clean up the seat without over-widening it. For full details and price write to Hall Mfg. Co., Toledo, Ohio, mentioning this publication, please. Sold through jobbers.

●

Trichlorethylene Solvent

A LIQUID solvent, produced in Europe for over twenty years and finding increasing applications in various industries in the United States within recent years, is called "Trichlorethylene," having a formula of $C_2H Cl_3$.

Commercially known as "Tri," it is a heavy, colorless liquid having a not unpleasant odor, and it is not flammable or explosive. It is claimed to be an excellent solvent for oils, greases, fats, waxes, tars, gums, etc.

It can be used for all dry-cleaning operations, such as for cleaning upholstery, clothing, etc., and for the degreasing of metal parts prior to plating, painting, etc. It is also valuable for cleaning machinery, automobile parts, etc., and for the degreasing of brake lining as a service operation.

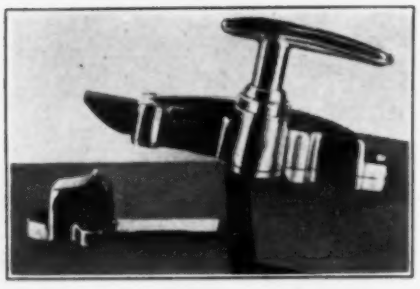
Because of its non-inflammable and non-explosive properties, it is increasing in popularity in the automotive industry. It actually can be used as a fire-extinguisher fluid. "Tri" can be mixed with other solvents such as benzol, naphtha, soap, etc., to cut down the unit cost.

If you are interested in the various applications of "Tri" that can be made in the business of fleet operation, write to Hummel Chemical Company, 90 West Street, New York City, for further data.

NEW STUFF *for* ROAD *and* SHOP *(Continued)*

Latch for Double-Door Trucks

THE Ryco door latch, for all types of double-door bodies, is so constructed that when it is applied to a pair of doors, it acts the same as if a solid bar is placed across them. It makes unnecessary any other locking device.



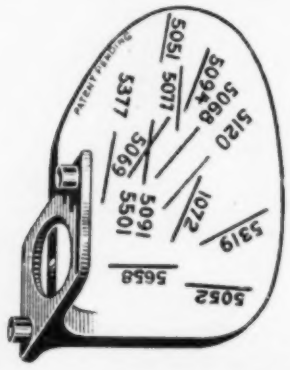
The illustration shows the parting line of the pair of doors and it can be readily seen how the construction of the latch and its application make a rigid fastening. The strike plate is constructed so that it will take care of a pair of doors which weave, and will not let them come open no matter how much the weave.

It is made of cast bronze, except for the steel bolt. Overall size is 8½ x 3¼ inches. Two styles are made; one with the locking handle and the other without the lock. Full details and prices will be sent by Ryco, Ltd., 375 26th St., Oakland, Calif.

●

Fuel Pump Rocker-Arm Gauge

WITH this gauge it is possible to check the rocker-arm position of any fuel pump, and thereby assure yourself that the fuel pump is operating on a factory-standard stroke.



A chart of 80 of the leading fuel pump numbers is furnished with the gauge, so that all it is necessary to do is to look up the correct position, apply the pump to the gauge by means of the flange and studs, and check the rocker-arm.

Interesting literature and complete details will be sent by writing to Cropley Instruments, Inc., 14 S. River St., Aurora, Ill. You'll mention FLEET OWNER, won't you?

●

Battery for Heavy-Duty Work

FOLLOWING its recent introduction of the new "Electro-Pak" automobile storage battery for passenger cars, The B. F. Goodrich Company, Akron, Ohio, now announces an extension of its line to include batteries made for practically every size truck, bus, fire truck, taxi-cab and tractor.

Plates in the new batteries are of special bus and truck design, heavier than those used for passenger car batteries. Separators are of the highest grade vertical grain Port Orford cedar, whose insulating strength is increased by perforated rubber sheets. This tends to retain the active material in the positive plates, and prolong battery life.

Connectors are large, flexible lead-coated copper strips, which will carry the high discharges necessary in truck and bus operation, and due to their flexibility, do not break because of severe vibration to which battery is subjected. Genuine hard rubber cases are used unless wood is desired.

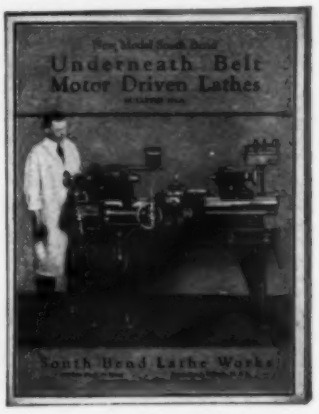
Bus and Truck T & H types carry a guarantee and adjustment policy for eight months or 24,000 miles, passenger car Super types in truck service 12 months, or 24,000 miles and passenger car standard and heavy duty types in truck service nine months or 18,000 miles.

●

Maintenance Shop Lathes

"UNDERNEATH Belt Motor Driven Lathes" is the title of a new catalog just published which illustrates and describes eight sizes and types of South Bend underneath belt motor driven lathes. These lathes are of the back-geared, screw cutting type and are adaptable for the fleet service shop. The lathes shown are from 9 inch to 18 inch swing size and are available in bed lengths from 2½ feet to 14 feet.

The type of lathe described in this catalog will handle such jobs as armature commutator truing, bushing making, valve refacing, piston finishing, brake drum truing and differential and clutch face truing; also such general lathe work as turning, facing, drilling, boring, reaming, taper turning and screw thread cutting.



In addition to the underneath motor driven lathes, there is also shown a complete range of countershaft drive lathes. Attachments, chucks and tools fitting both types of lathes are listed and described. Any reader may obtain a copy of Bulletin No. 101-A by writing to the Technical Service Department, South Bend Lathe Works, South Bend, Indiana, and mentioning the name of this publication.

●

New AC Spark Plug Cleaner

A NEW and improved spark plug cleaner has been introduced by AC Spark Plug Company, Flint, Mich.

The new cleaner incorporates many new improvements in appearance and mechanical detail, the most important of which are: A new metal container, with a rigid metal base; ad-

justable adapter ring, which permits a more thorough cleaning of the small 14 millimetre spark plugs; refinements in the mechanical construction to insure faster cleaning and longer life.

Interested fleet operators may obtain full details from the manufacturer, without obligation.

BASA HAMMER
with
REMOVABLE RAWHIDE FACES

Designed to deliver a hard blow without marring the surface. Jaws of the adjustable metal head can be set up to hold the rawhide faces securely, or release them for replacement.

Made in 5 different sizes, each having the exact weight to give proper balance for striking a measured blow.

There are many quick repairs to motor cars, trucks and buses that require the striking of a hammer blow without marring the material struck.

Send for full particulars.

Hammer with nut loosened for removing faces.

When worn, Rawhide Faces can be quickly renewed at small cost.

Copper or Babbitt Faces furnished if desired.

Handles of specially selected straight grain hickory, carefully fashioned to the hand to prevent fatigue to worker.

GREENE, TWEED & CO.
SOLE MANUFACTURERS
109 DUANE STREET NEW YORK

Maintenance and Inspection Methods

(*Continued from page* 28)

spection points. The ideal arrangement is to inspect at garage points in off-peak vehicle hours, provided the number of vehicles that can be serviced at or from a given point justifies proper maintenance personnel equipment, and materials and supplies thereat.

It has been found desirable to develop a new schedule for each inspection period to allow for the changes in days of the week that particular dates of the month fall on,—holidays, changes in the fleet, assignments and vehicles repaired. Contrary to expectations, this can be done quite easily.

Department heads should be advised, prior to the beginning of each period, the date, time of day and inspection point that has been set up for each vehicle assigned to them. This can suffice as notice to deliver the vehicles at the proper time and place.

Our company has found it necessary and desirable to follow this up with an individual notice 4 days in advance of the inspection date of each vehicle to the department head as a reminder. In this case, the notice is turned over to the driver as instructions to comply therewith. It carries a request that the driver note any defects that are apparent to him, that might not be apparent to the inspectors, and any other defects that in his judgment should receive attention. The notice is left with the vehicle for the inspector's information.

Actual inspections made are checked daily, and, if vehicles are not reported as scheduled, department heads are called the day after for the reasons, and new dates set.

Some companies have found it advantageous to use an inspection bulletin board, upon which the vehicles scheduled for that station for the period are shown.

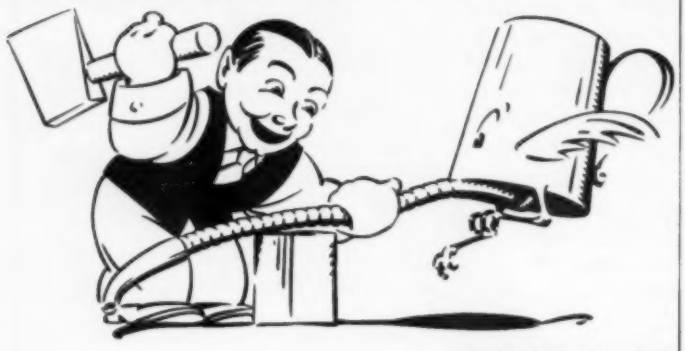
Inspection reports should be reviewed daily by the Transportation Manager or a qualified assistant, to note the condition of individual vehicles and any shop work that should be scheduled at a later date.

In any fleet where vehicles are inspected thoroughly and regularly, the number of defects reported by the operator from day to day should be reduced to a minimum. In other words, it is believed that with a good inspection system it is possible for vehicles to perform satisfactorily between inspection periods with very little or no repairs necessary between inspections. Any chronic or recurring troubles should be studied and the reasons for those troubles determined and corrected. Only when this is done will true preventive maintenance be employed.

It is obviously impossible to correct for all of the wear-and-tear and other forms of depreciation that take place in a motor vehicle even when the best of inspection systems and preventive maintenance are employed. It is, therefore, necessary to overhaul vehicles from time to time; but it is not believed that it is economical to attempt to set up any such overhaul on a predetermined mileage basis. The reason for this is that the make of vehicle, type of service in which it is employed, character of the driver, climatic and road conditions and other factors have such an important bearing, that seemingly it is impossible to predetermine, with any fair degree of accuracy, just when major repair work will be necessary.

Quite recently, one manufacturer has made available rebuild engine assemblies at a very reasonable price to the fleet operator. I believe that this is a big forward step in answering the overhaul problem, and it is hoped

Cut the Oil Can Bird's *bill*



. . . . in *HALF*

YES SIR! You can cut in half the long, large bill of the Oil Can Bird roosting in your garage by using the Skinner Oil Reclaimer.

Think of it! For 1½ cents per quart you can buy the SAME oil you are now using simply by changing your crankcase drainings into a product having the same lubricating characteristics as the new oil.

The Skinner removes all contaminations automatically without complicated operations, use of chemicals. Low operating cost makes possible purchasing highest grade lubrications — more frequent drainings — thus greatly lowering maintenance costs.

Let us help you trim the bill of your Oil Can Bird by sending us the information below.

·SKINNER·
OIL RECLAIMER

SKINNER MOTORS, INC., Pioneers in Oil Reclamation
2229 Dalzelle Street, Detroit, Michigan

Please tell us definitely with facts and dollar-and-cents figures, what a Skinner Reclaimer will save us in cash and oil.

We purchase approx. _____ gals. of oil per month
We drain approx. _____ gals. of oil per month
We pay _____ per gal. of oil
Our electric current rate is _____ per kilowatt hour

Signed _____ 3-34

that more manufacturers will follow the example. The individual operator cannot overhaul engine assemblies as cheaply as can the manufacturer, as he has not the equipment to do it. Of course, the manufacturer must throw up the same rigid inspection safeguards around his rebuilt engines that he does around his factory production.

In many companies, repainting of vehicles is performed on more or less of a fixed schedule; and, where such a schedule is employed, it is customary to do necessary mechanical work on the vehicle before repainting. In such cases as these, what might be termed "major overhauling" follows closely more or less with the repainting schedule. In other words, if vehicles are repainted every 18 months to 2 years, major repairs are performed at approximately the same intervals.

Systematic planning is essential in performing overhaul work in order that the vehicle may not be held out of service any longer than absolutely necessary. Every repair job involves two costs, i.e., the cost of the repair itself and the cost of lost vehicle time. Also, if service to the customer is impaired, this may cost money due to complaints and loss of business.

The magnitude of the automobile repair shop, the personnel and the shop equipment have a direct bearing on motor vehicle cost of operation. Obviously, many considerations affect any plan; hence, in the treatment of this subject only broad and general principles can be dealt with.

●

Do Fleets Abuse the Highways?

(*Continued from page* 32)

has been implanted in their minds.

The National Safety Council keeps a close record of highway accidents. During a recent four-year period they advised that fatalities involving privately owned automobiles have increased 50 per cent and during the same period fatalities involving all commercial vehicles have decreased 12 per cent, and after a one-year period ending last June all intercity buses, according to their report, had 70 per cent less accidents per 100,000 miles of operation than all other types of motor vehicles combined. The safety of motor buses was proved by the National Safety Council after having conducted a nation wide contest with all types of fleet owners.

The proof of the possibility of operating safely on the highways is best shown by the following figures which are taken from a report of the National Safety Council in its report for December, 1933, showing a no-accident record of commercial vehicle fleets; and these records are statistically accurate.

Greyhound Management Company (Detroit Division). Inter-city Bus Operation. 985,942 vehicle miles. Terminated September 8, 1933.

Gulf Companies (Ft. Worth Division), Petroleum (trucks and passenger cars). 886,717 vehicle-miles. Terminated May 4, 1933.

Oklahoma Gas and Electric Co. (Central Division. Sapulpa, Oklahoma). Public Utilities (trucks and passenger cars) 835,295 vehicle-miles. Terminated October 17, 1932.

South Shore Laundry, Chicago, Illinois. Laundries. 810,750 vehicle-miles. Unbroken November 15, 1933.

Pocahontas Transportation Company, Bluefield, West Virginia. Intercity bus operation. 779,159 vehicle-miles. Unbroken, September 30, 1933.

You will note that the Greyhound companies operating in the City of Detroit, where traffic is heavy and driving is necessarily difficult because of the thickly

populated area, have established a world's record of 985,942 vehicle miles without an accident in a record which terminated on September 8, 1933. This is attributable in a large degree to the interest in safety of Mr. Manfred Burleigh, who is the Vice President in charge of operations in this area. The other outstanding thing about the records described above is that the large fleet owners have shown such an interest in safety as to effect such excellent records.

Drivers of privately owned automobiles have had no such training and therefore have never considered the safety angle in the same degree as the commercial driver. A properly designed drivers' license law will inculcate in every driver's mind the importance of safety and courtesy on the highway. The protection of the rights of all users of the highway by state police or other police officials is the next move.

The careless or reckless bus driver or truck driver is disciplined by his boss, but the private owner has no discipline unless it is by education through a drivers' license law or by the police. Discipline has a wholesome effect on all drivers.

Mr. Marcus Dow, whom I consider one of the genuine authorities on highway safety and highway safety methods, has frequently said that "Safety educations mean more than any other effort in the development of a careful driver." He has repeatedly stated that the slogans "Safety First" or "Be Careful" are excellent slogans, but they are not sufficient to make for safety on the highways. The campaign of education must be thorough. It also must be interesting and instructive. Speed may be dangerous at 50 miles an hour, and it may also be dangerous at 10 miles an hour, but speed is always dangerous when not properly controlled. The slow going vehicle that fails to keep up with the traffic may be and generally is more dangerous than the fast moving vehicle. We should record all accidents and judge the causes and effects. Accidents should be enumerated and classified for public benefit, and they should also be publicized.

The discussion of safety by Parent-Teacher Clubs, Civic Associations and State Societies can be made a very interesting and instructive subject, and if done more often would be a definite step toward the elimination of accidents as the result of the abuses of the highway by operators.

●

The "Low Down" on Graphited Lubricants

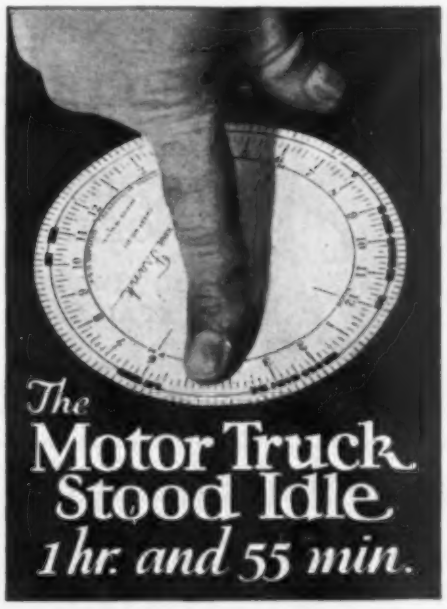
(*Continued from page* 36)

way to that point is of such a low viscosity as to be very weak in pressure sustaining qualities.

Another instance in which top oils play an important part is during the starting of a motor. At this time the walls are usually free of oil, the same having drained back into the crankcase at the end of its previous run while the cooling water still retained its heat. If a little lubricant is fortunate enough to have remained behind it is usually washed free by the raw gasoline carried into the cylinder during the choking operation.

It is obvious, therefore, that if a lubricant is introduced with the fuel, the danger of excessive wear or possible scoring of the cylinders is immediately minimized.

By injecting the lubricant in this manner a certain amount reaches the inlet valve stems. If lubricants are chosen that do not decompose under these severe conditions, a certain amount passes out with the exhaust gases. As the lubricant passes the exhaust valves it is partially retained by the valve stems and is carried



And You Can Put Your Finger Right On It!

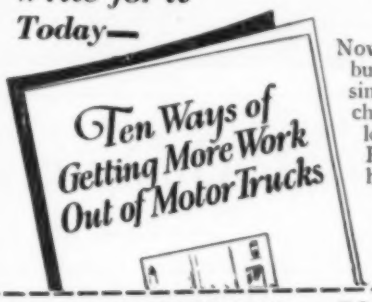
WHAT does it cost when your motor truck stands idle somewhere for an hour and 55 minutes? It costs pretty close to $8.00! That's plenty, we'd say.

One thing is certain, you never realize it until you SEE it. And when you see it in chart form (like the *Servis Recorder* chart above) then, we repeat, you can put your finger right on those delays; and then you'll know what to do, all right!

A Truck Can Easily Waste $500 a Year!

Why allow it, when the *Servis Recorder* can prevent these costly delays? All you need is a screwdriver—why, you could *NAIL* this *Servis Recorder* on your truck, and it will automatically give you every day this "picture" of the work your truck did during the past 24 hours—the heavy marks on the chart registering the truck *at work* and the spaces in between showing when it was *idle*.

Write for it Today—



New 7-Day Model

Now you can get a 7 days' busy-idle record on a single chart without changing. When you lock the new 7-Day Recorder, you don't have to touch it again for a week! The coupon brings the whole story.

THE SERVICE RECORDER CO. F.O. 3
Hanna Bldg., Cleveland, Ohio

Please send us, without obligation, "10 Ways of Getting More Work Out of Motor Trucks."

Company .....

Attention of .....

Street .....

City & State .....

The Service Recorder Company
Cleveland, Ohio

THE SERVIS RECORDER
"Keeps Trucks Busy"

The NEW
SPOKE
CELORON
TIMING
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IMMEDIATELY AVAILABLE

From
NAPA WAREHOUSES AND DISTRIBUTORS

ARMORPLY
A SUPERIOR METAL FACED PLYWOOD PANEL FOR BODY CONSTRUCTION
Write for samples and prices
UNITED STATES PLYWOOD CO. INC.
603 W. 36th. ST. NEW YORK CITY

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AXLES

A complete line of superior quality axle shafts for all makes and models of passenger cars, trucks and buses. A special engineering service to study your individual problems is available to all responsible fleet operators.

Write for complete information

The U.S. Axle Co. Inc., Pottstown, Pa. U.S.A.

6 blanks = 160 Drums

Gunite has developed a new master drum. There are six styles, which by simply drilling bolt holes and sometimes enlarging out the hub bore, will make 160 numbers of Genuine Gunite Brake Drums.

FREE *Send for copy of our big 1934 Catalog giving full information about these convenient Master Drums.*

GUNITE FOUNDRIES CORP.
DEPT. F 3 ROCKFORD, ILL.

into the guides by the reciprocating motion common to this part of the engine. Efficient valve action is essential to good engine performance. Unless the valves seat promptly and neatly, carbon is liable to deposit on the valve face or seat, thus making impossible the full closure of this important part. It is logical that if valves exhibit any tendency toward sticking, efficient valve action is out of the question. It is not difficult to prove these points in practice. Engines which are equipped with either external top oilers or which feed lubricant through the fuel, possess a peculiar flexibility which readily manifests itself. Among other things acceleration is stepped up, a greater maximum speed is possible and a quieter engine performance is noticeable.

Colloidal graphite is therefore very suitable as a combustion chamber lubricant. Mention was made above of its resistance to oxidation and how it is capable of serving as an anti-friction body in the absence of oil. It should be stated here that it is also insoluble in all known solvents with the result that it is unaffected by gasoline. The size of the graphite particles is sufficiently small to enable the same to pass through the carburetor jets with ease. These enter the combustion chamber as a mist with the fuel and form on friction surfaces the graphoid surfaces referred to above. The excess passes out with the exhaust gases as a smoke. The latter is invisible, however, because of the minute quantity employed and the microscopic size of its particles.

By reviewing the properties of graphoid surfaces, it is evident they will not only provide efficient cylinder lubrication in the absence of oil or in the presence of gasoline, but because of the characteristic affinity these surfaces possess for oil, they will tend to improve fluid lubrication by holding in closer union any oil which may be carried by the ascending stroke of the piston.

In conjunction with a product of this kind, it is customary to obtain further advantages of graphite lubrication by charging the crankcase oil with a small amount of colloidal graphite. With the consistent use of such a lubricant graphoid surfaces are formed on the main and crankshaft bearings, wristpins and the lower cylinder walls. These function in a manner with which you are already familiar. The use of colloidal-graphited oils, therefore, is an economical measure, in that the life of the lubricant is greatly lengthened and the motor guarded at all times by two lubricants instead of one.

A word on the manner in which colloidal graphite prolongs lubricant life is justifiable at this point. The "life" (or period of efficient lubricating ability) of plain oils used in the crankcase of an internal combustion engine is based, primarily, upon the effectiveness with which they are kept free of diluents, thus preserving their original viscosity at a given temperature.

Crankcase oils may be diluted by gasoline as a result of bad rings or excessive "choking." Furthermore, they may suffer "self-dilution" due to their "cracking" into lighter fractions under high temperatures. When an oil "thins out" its film strength decreases and its ability to sustain heavy loads diminishes.

The addition of colloidal graphite to crankcase oils, however, exerts certain influences which make possible the continued use of oils which if free of colloidal graphite would endanger the mechanism they are designed to protect.

Tests made on the Daimler-Lanchester Worm Gear Testing Machine at the National Physical Laboratory, England, show that the value of a straight mineral oil

NO UPKEEP EXPENSE

Better Riding and Longer Wear

BLACK DIAMOND

ALL RUBBER
BACK AND SEAT CUSHIONS

Fleet operators who check repair costs on cushions—know how wasteful it is to buy inferior quality. Hard service demands cushions for seats and backs that stand-up under hard wear. Black Diamond All Rubber cushions contain no metal or coil springs to break or puncture upholstering. There is no other cushion on the market like Black Diamond for comfort, appearance, and long wear. Available in any size, thickness, or shape to fit any seat or back.

DO NOT CONFUSE WITH OTHERS!

These cushions are different. Black Diamond cushions are moulded in one piece of semi-sponge rubber and patented. This new principle of diamond grid construction allows the cushion to absorb all road shocks. Drivers who have ridden on them, over the roughest roads, declare that they are more cool and more comfortable than any other cushion they have ever used. The coupon below will bring further interesting facts. Clip and mail it right now.

Diamond Grid Construction

These patented Black Diamond cushions embody a new and scientific principle of construction. Unlike others, these cushions are moulded in one piece, of semi-sponge rubber, and permit *suspension* of body-weight instead of support. Send for our descriptive folder explaining this feature in detail.

Require No Repairs

You will get *unusual* service out of these cushions—nothing to break—nothing to replace.

Manufactured by

KARPEX MFG. COMPANY
INDIANAPOLIS

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KARPEX MFG. COMPANY M-1
Indianapolis, Indiana.

Without obligation send us your special folder for Fleet Owners.

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Attention of.....
Street Address.....
City and State.....

BLACK DIAMOND RUBBER SEAT CUSHIONS ASSURE PERMANENT RIDING COMFORT

as a lubricant, when the load is great, diminishes rapidly above a certain critical temperature. It has been found by a very large number of tests under the same conditions of speed, load and supply of lubricant at a given temperature, that the efficiency of the worm gear in the testing machine remains remarkably constant at the load selected for the tests and, as differences of efficiency could be determined to 0.1%, the efficiency temperature values obtained give a valuable indication of the quality of the lubricant.

With the use of this machine it was shown that the addition of colloidal graphite to an oil raised its critical temperature 10 to 20° C. (18 to 36° F.).

From the tests just cited, it is evident that a crankcase oil, charged with colloidal graphite, despite its dilution, is capable of providing lubrication at a temperature higher than an uncharged oil in a similar state of dilution.

Gears and other mechanical parts operating under heavy pressures pit less and consequently last longer when lubricated with oils or greases containing colloidal graphite. This fact should be of particular interest to fleet owners whose trucks are fitted with gears of the hypoid type.

Another lubricant charged with colloidal graphite for which there is a great demand is one for use during the limbering up of new mechanical devices, particularly internal combustion engines. The mechanics of breaking-in new machines is very aptly described by S. A. McKee of the U. S. Bureau of Standards in the December 1927 issue of *Mechanical Engineering*. He says:

"When a new machine is first started up the operator usually runs it at reduced speed and if possible under reduced load, and carefully watches to see that there is no excessive heating in the bearings, then the load and speed are gradually increased until the machine is operating at its rated capacity. Even after this condition has been reached it usually requires a rather long period of actual service before the machine becomes really "limbered up" and behaves in a normal manner.

"One reason for this limbering-up or "running-in" process is that even with the best of technique in machining and finishing the working parts, the surfaces of the journals and the bearings are relatively rough and irregular as compared to the minimum thickness of the film of lubricant between them. Thus, even under rather light operating conditions, the high spots on the journals tend to strike those on the bearings, causing local breakdown of the oil film and corresponding increase in friction and heating. When these high spots come together, however, unless the surfaces are too rough or the load too great, a smoothing action may take place either by the tearing off of particles on the high spots, or, if one of the surfaces is made of a relatively ductile metal, by a sort of cold working. Under the proper conditions this smoothing action continues until eventually the surfaces of the journals and bearings become relatively smooth and polished."

Describing the manner in which colloidal graphite facilitates this operation we find the following from the pen of E. Falz, Chief Engineer Consultant for the Committee for Economic Fixation in the Imperial Institute of Economics in Germany:

"The smoothing action of the surfaces obtained through running-in, which contributes so greatly to the increase of the load capacity, can, however, be obtained artificially too, without any grinding or crushing procedure. A modern process of this type, unfortunately too little known as yet, consists of breaking-in the

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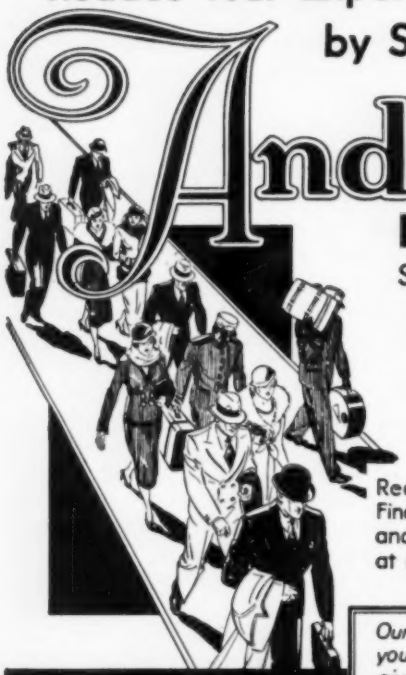

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smoothly finished surface with colloidal graphite.

"Colloidal graphite, mixed in a certain proportion with oil is drawn into the microscopic pores of the shaft and bearing-metal, and under the influence of the pressure and rotation gives both members a high degree of polish never to be obtained merely by the ordinary means of practice. After a certain extended period of operation all surfaces receive a dark, durable, glistening coat of graphite, which is not removable even by washing, because colloidal graphite (but not ordinary powdered graphite) enters into a very firm combination with a metallic surface.

"The advantages of this procedure are felt in various ways: Slowing rotating or merely oscillating pins with a high surface pressure, where fluid friction is not attainable, yield a much lower friction when colloidal graphite is added to the oil than when it is absent. This is because the direct friction of steel upon graphite is decidedly less than friction between steel and bronze, or any other bearing metal.

"Another invaluable advantage of graphite lubrication from the operating standpoint is its peculiarity of maintaining operation for long time after the oil supply has been cut off, and without allowing overheating or wear in the bearing. This fact, which has been confirmed by exhaustive experiments, is explained by the circumstance that the coefficient of the friction of steel on colloidal graphite is not much greater than that of fluid friction, and a roughening of the graphite-coated surface on a smooth shaft is not to be feared even when the pressure is very high.

"In any case, even in pure fluid friction, the shaft and bushing receive an unsurpassable polish through breaking-in with colloidal graphite; the height of the remaining irregularities is diminished to the utmost possible degree and consequently lubricating films of much slighter thickness becomes admissible. The result is that a bearing broken in with colloidal graphite, and which is otherwise well-constructed, will support much greater loads than originally, even after going back to pure oil lubrication.

"This point is of exceptional interest. In running-in the irregularities are reduced by diminishing the projections, and in the case of graphite by filling up the indentations. The result is basically the same, except that far smoother surfaces are to be obtained by the use of graphite."

Manufacturers of automobiles in America, Great Britain, and on the Continent, have long employed colloidal-graphited oils for this purpose. We now find builders of aero engines following in their footsteps. By so doing they find that friction parts take on a high polish, "limbering-up" time is reduced, seizure difficulties are minimized, closer fits are possible and tight motors which would otherwise require dismantling are readily freed.

The experience of large scale motor manufacturers over a number of years would indicate that there is no question about the effectiveness and the desirability of such a product for use among distributors and purchasers of new and rebuilt motor cars.

Colloidal graphite is also an important ingredient of many penetrating oils used for the lubrication of springs and other close fitting parts. Plain oils do not serve effectively in this application for the reason that it is necessary to sacrifice their lubricating properties in order to promote penetrating qualities.

When graphite is added to such compositions, the liquid constituents act as mere carriers for the graphite which, upon evaporation of the vehicle, provide dry lubrication.

Capable of entering the finest interstices, colloidal

graphite—unlike powdered graphite—is not "filtered" out by machine parts in close contact.

It is important, of course, that one thoroughly understands the difference between natural and manufactured graphite and to be able to distinguish between the latter substance in the powdered and in the colloidal states. It is surprising how much confusion exists today even among technical men on these points. All of the products discussed in this paper involve the colloidal manufactured product—not the powdered natural substance. Confusion on these matters has caused not a little embarrassment to colloidal graphite manufacturers and in some instances, have been the cause of unwarranted criticism and complaint.

(EDITOR'S NOTE: Should any readers of this publication desire it, we shall be glad to send a list of the names of the various lubricants that contain colloidal graphite in their composition. Address the Editor, if interested).

●

Trucking Industry Code Effective Now

OWNERS of approximately 2,000,000 motor vehicles, transporting property over publicly used roadways, come under the Code of Fair Competition for the trucking industry, now effective. They include operators for-hire and operators not for-hire, except to the extent that the latter are covered by other codes. As a result of the effectiveness of the trucking code, it is estimated by the American Trucking Associations, Inc., that about 300,000 employees will be added to trucking payrolls, representing an annual increase in wages of $260,000,000.

The code provides for a base work week of 48 hours and minimum wages for skilled and unskilled labor ranging from 25 cents to 35 cents per hour in the South and 35 cents to 55 cents per hour in the North. It requires that all operators subject to the code register within thirty days of the effective date (Feb. 25th), giving the number of vehicles, number of employees, tonnage carried and other pertinent facts necessary for proper policing of the industry.

Operators for-hire must file their minimum rates within forty-five days and must adhere to them under penalty of violation of the code. Certain trade practice rules must be observed by all such operators and additional rules may be formulated by trade agreement by natural or territorial divisions of the industry. The code will be administered by a series of decentralized code authorities under the supervision of the Administrator of the National Industrial Recovery Act. After compliance with provisions of the code, members of the industry must display an insignia on all their vehicles.

"In the last decade," Ted V. Rodgers, president of the national organization, explained, "the transportation of property over the public highways has assumed significant proportions. Today it constitutes an integral part of the transportation system of the country. In contrast with other major forms of transportation, the trucking industry is typically a small unit, owner-operated and a flexible type of transportation activity. The natural operation of these factors has produced conditions within the industry tending to result in acute competition.

"The industry anticipates, however, that the effective operation of the provisions of this code will tend not only to stabilize the employment and operating conditions within the industry, but will supply data which are essential to the satisfactory solution of the complex problems created by the rapid and extensive growth of highway transportation."

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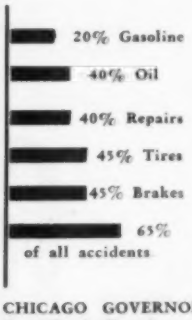

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Fleet Accident Campaign Gets Results

THE intensive campaign to reduce automobile accidents waged by Drake Bakeries, Inc., of Brooklyn, N. Y., during the past seven years, has accomplished the following results:

Brooklyn Plant: Forty-six drivers awarded Merit Certificates by the insurance company for periods of one to seven years without a chargeable accident, establishing a mileage record of 1,544,400 covering this period.

Bronx Plant: Thirty-four drivers awarded Merit Certificates for periods of one to six years without a chargeable accident with a mileage record of 1,018,520.

The above information comes to us through the courtesy of Mr. E. C. Balcke, Treasurer of the Corporation.

visions of the code. Operators not for-hire must conform to all provisions, except the provisions covering rates, except to the extent that their trucking operations are subject to any other approved code of fair competition. Farmers, owning about 835,000 trucks, are not subject to the code if they do not operate for-hire. Trucks owned and operated by farmers' cooperative organizations, however, must register, observe the maximum hours and minimum wages, supply certain reports and carry a modified insignia. Vehicles owned by furniture warehousemen, used in the transportation of household goods, if the amount of other merchandise occasionally carried in such vehicles does not exceed 10 per cent of the total revenue earned by the vehicles, may register either with the trucking industry or under the code of the household goods storage and moving trade.

It is expected, in the opinion of Mr. Rodgers, that the trucking industry, through the code, will be able to regulate itself and thus obviate the necessity for Federal regulation of the business of transportation of property by means of motor vehicles.

"It is recognized, of course," he continued, "that the codification of industry largely is an experiment. It is being watched closely by the Interstate Commerce Commission, the Federal Coordinator of Transportation, committees of Congress and others. We hope the trucking industry will be able to display a capacity for self-regulation to relieve the government of the burden of regulating this vast and varied agency of transportation.

"Through the Code, sponsored by the American Trucking Associations Inc., an organization composed of 108 state and local motor truck associations, a system of decentralized administration and control will be set up which should prove considerably more effective than any system of bureaucratic control."

●

Cab-Over-Engine Models by G. M. C.

TWO new types of trucks, designed especially to meet length and weight restrictions imposed by statute in different states without sacrificing pay-load capacity, have been introduced in the new line of 1934 General Motors trucks. They are "cab-over-engine" models and "set-back front axle" models.

For any given pay-load capacity, both new types are shorter than trucks of conventional design. The reduced length is of advantage not only in meeting legal restrictions on the length of truck and trailer trains, but also in providing increased facility of operation in congested city traffic. Wheelbase and turning radius are reduced, and less garage space is required.

Legal limits on the total load carried on a single axle, which in many states prevent carrying the full rated load of a heavy-duty truck, are offset in the new types by a redistribution of weight. Instead of dividing the load 75 per cent on the rear axle and 25 per cent on the front axle, the cab-over-engine models carry only 67 per cent rear and the set-back axle trucks carry 70 per cent. With this type of construction more load is placed on the front axle which gives more efficient tire and axle loading.

The GMC cab-over-engine models strike a new note in their impressive appearance. There is no hood, the front of the cab being nearly flush with the front end of the chassis. The engine is mounted in a "wind-tunnel" that extends back from the radiator grille and divides the cab floor and seat in two sections. Engine heat is swept through this conduit and discharged downward into the air stream. Heat insulation in the

walls of the tunnel prevents heating of the cab.

Another unusual feature is the "front-door" construction of these models. The radiator grille may be swung wide open on hinges, permitting the removal of the engine for major service operations, the engine being mounted in a sub-frame on rollers. For ordinary maintenance and minor service work, the engine cover in the cab may be removed for access to the ignition units, valves, carburetor, etc.

The driver's cab is provided with a controlled ventilating system, taking air in from the front and discharging it through special roof vents and the side and rear windows.

Besides these new types of truck, GMC is introducing new or improved units throughout its line of heavy, medium, and light duty vehicles. Improved appearance, comfort cabs and greater braking capacity are general in the 1934 models. In some cases, there have been price reductions.

●

Progress in Silvertown Safety League

IN the first nine months of its operation, the program for safety awards to truck, bus and taxi-cab drivers carried out by The B. F. Goodrich Company, has resulted in 42,437 drivers of commercial vehicles signing the safe driving pledge and entering the race for the safety awards, it is announced from the company's principal offices in Akron, Ohio. These drivers represent 3245 operators of trucks, buses or taxi-cabs, either individuals or fleet operators, in every section of the country.

Hundreds of the awards have been presented to drivers who have already completed their first six months of driving without an accident for which they were responsible. Presentation of the awards is taking place daily.

Each individual driver receives a Silvertown Safety League silver medal upon completion of six months' operation of his vehicle without accident. If he operates his vehicle for a year without accident, he receives a gold medal. Each fleet having a perfect no-accident record for a year is awarded a certificate attesting this fact.

The safety award program for drivers of commercial vehicles has been given cooperation by public officials, police officials and other civic leaders fighting the menace of accidents on the highway.

For the first nine months there were 4650 drivers in the Cleveland district of the company enrolled in the contest; 4407 from the Pittsburgh district; 2787 from the Detroit district; 3021 from the Los Angeles district; 2666 from the Atlanta district; 2572 from the St. Louis district; 1963 from the Washington district; 1923 from the Boston district; 1531 from the Charlotte, N. C. district; 1496 from the Dallas, Texas district; 1191 from the New York district; 1163 from the Cincinnati district; 1118 from the Philadelphia district; 1107 from the Seattle district; and 1096 from the Buffalo district, among others.

●

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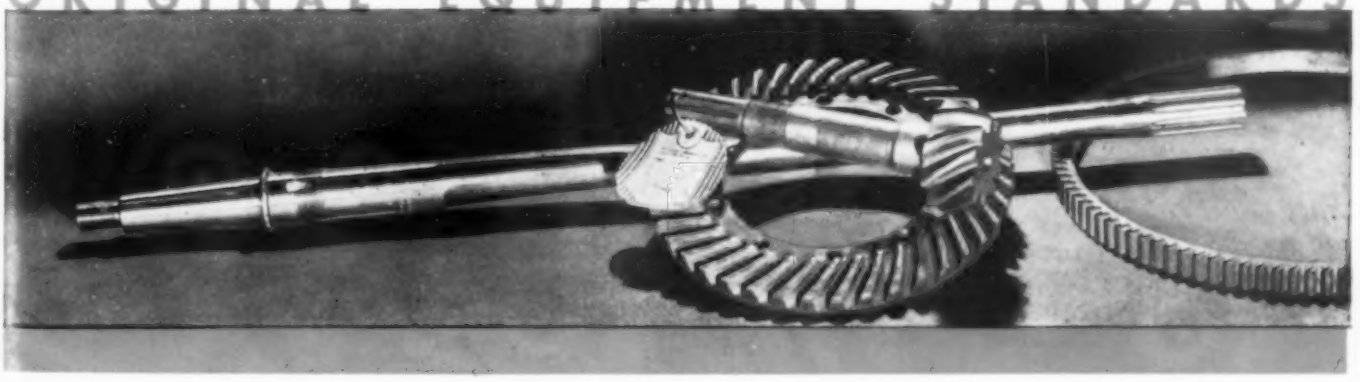

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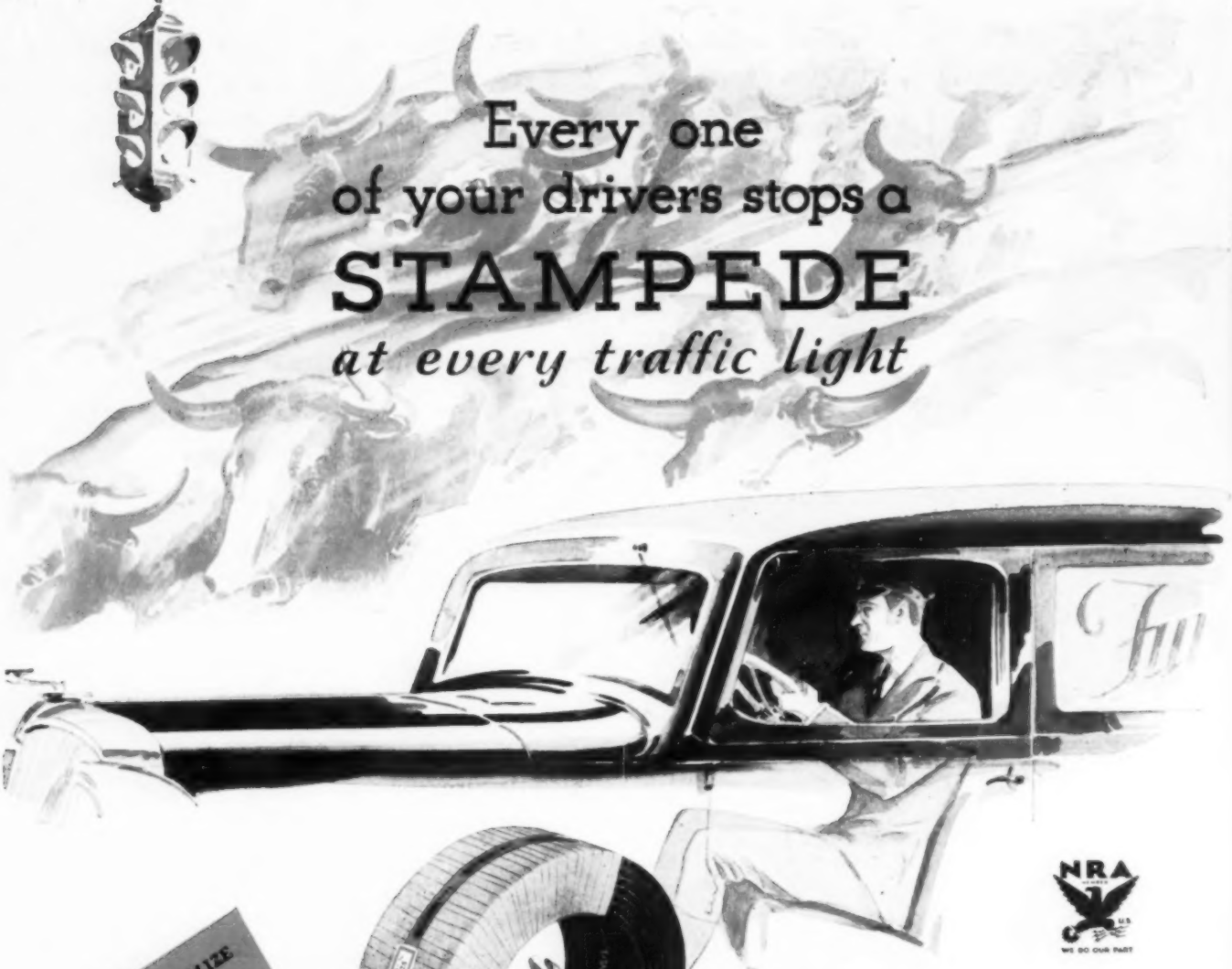

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